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ABSTRACT

This handbook is intended to assist new home study directors of education, course writers, instructors, and others interested in home study course development. It contains 13 guides that were each written by practicing home study educators and experts in the correspondence study field and that together cover the complete course development process, from market research to final printing of course materials. The following chapters/guides are included: "From Theory to Practice" (Lambert); "Naming the Parts" (Hatcher); "Developing the Modern Home Study Course" (Frenzel); "Supervising Course Authors" (McKeown); "Preparing Instructional Objectives" (Mount); "Total Quality Manuscripts" (Marshall, Buddle); "Managing Text Readability" (Hughes); "Writing Examinations" (Cherry); "Motivation through Interaction and Media" (Dasenbrock); "Designing a Home Study Course" (Foltz); "Desktopping Great Looking Courses" (Welch); "The Curriculum Development Cycle" (Gibbs); and "Financial Analysis in Course Development" (Godfrey). In addition to including step-by-step guidelines, many chapters include sample course materials and/or forms. Contains 17 references. (MN)

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Home Study

Course Development Handbook

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Home Study

Course Development Handbook

Third Edition

National Home Study Council

Home Study
Course Development Handbook

Third Edition

Edited by
Michael P. Lambert
and
Sally R. Welch

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National Home Study Council
1601 18th Street, N.W.
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(202) 234-5100

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The National Home Study Council (NHSC), a voluntary association of accredited home study schools, was founded in 1926 to promote sound educational standards and ethical business practices within the home study field. The independent NHSC Accrediting Commission is listed by the United States Department of Education as a "nationally recognized accediting agency." The Accrediting Commission is also a recognized member of the Council on Postsecondary Accreditation (COPA).

Introduction

The National Home Study Council is proud to issue the third edition of *Home Study Course Development Handbook.* The Handbook was first published in 1980 and was revised in 1988. It has been an NHSC "best-seller" and has proved to be an indispensable blueprint in helping guide hundreds of home study course writers and developers in creating good correspondence courses.

This Handbook is a collection of current, practical, and essential guides on how to develop a correspondence course. It presents the vital skills and knowledge developers of home study courses need for success. The Handbook covers a complete range of topics of course development, from market research to the final printing. It is intended for use by new home study Directors of Education, course writers, instructors, or anyone interested in home study course development.

The Handbook authors are practicing home study educators and experts in the correspondence study field. The NHSC is deeply indebted to them and expresses gratitude for their fine contributions to the advancement of the home study field.

Unlike the previous two editions, this edition of the Handbook goes into greater detail on the important new developments in communications technology. Understandably, when 13 different authors each write about a common subject, there will be some duplication of the topics covered. This Handbook is no exception. But we are reminded that one of the cardinal tenets of sound correspondence instruction is the liberal use of "repetition."

We hope that you will find this third edition of the Handbook useful and we welcome any suggestions for future editions of this classic.

Michael P. Lambert
Executive Director
September 1993

P.S. We urge you to acquire the other two Handbooks in the NHSC series, one on student services and another on advertising. An order form is bound into the back of this Handbook for your convenience.

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Chapter One

From Theory to Practice

by
Michael P. Lambert
Executive Director
National Home Study Council

The Author

In this initial chapter, Michael P. Lambert sets the stage for our discussions about course development for the entire Handbook.

Mike, who has visited over 400 correspondence schools over the past two decades, speaks from a background rich in experience in home study education. He summarizes correspondence learning theory and presents ideas on how to apply the theory to text design.

"The developer of course materials today," he writes, "is able to choose from a diverse and exciting variety of media to accomplish the instructional mission of ensuring that real learning takes place."

Introduction

Correspondence—or distance education—has always relied upon the printed work to carry its instructional message to the learner. The home study programs of the 19th century were based on textbook study, including the King James Bible.

Textbooks gave way to specially-written lessons, modularized booklets and other print-based reading materials. While print remains—and will likely remain for some years—the mainstay of distance education, technology is making dramatic new contributions to the enhancement of the method of instruction by correspondence.

Most home study educators will agree that the media used to transmit and facilitate learning at a distance is **secondary** to the learning principles and strategies employed. Sound correspondence instruction is "media indifferent": if a videotape, audio tape, computer disk or compact disk is usable and cost effective, then the course designer should feel free to consider its use. There is no argument today about print versus computer, telephone versus mail or textbook versus booklet. The developer of materials today is able to choose from a diverse and exciting variety of media to accomplish the instructional mission of ensuring that real learning takes place.

When the first NHSC *Home Study Course Development Handbook* was published in 1980, the various authors quite naturally wrote about print-based texts. Discussions about technology were confined to a mention of audio cassettes, video cassettes and the telephone.

Today, course developers need to be knowledgeable about much more than print technology if they are going to provide their students with the best available learning tools and experiences.

Much of the content in this edition of the Handbook refers to or is based upon "text creation." But the many principles you will read about are readily applicable to any media, since text is fundamental to all distance study programs.

Let's begin with a summary of correspondence learning theory and conclude this chapter with some ideas on how to apply the theory to text design.

Theory of Learning by Correspondence

Educators are still at a loss to explain exactly how the learning process takes place in the chemistry of the brain. There has been woefully little conclusive research on how adults learn, and there has been even less published research on correspondence learning theory.

Yes, we make attempts to describe what we do, and maybe even why we do it. But we are hard pressed to give a discreet, understandable and accepted description of the theory behind the success of home study methodology.

Let us approach this topic by describing some of the basic beliefs or axioms commonly held by home study educators:

- Learning takes place everywhere, and most of it outside the classroom.

- Home study learning theory is based on the concept of independent, mature learners studying formally prepared materials in a given subject. The learners are motivated primarily by the interest they have in the subject they are studying.

- The theory espouses the concept of "captaincy of self," wherein the individual student assumes responsibility for activating and sustaining the learning process. The teacher (or more properly, tutor) plays a supportive role by guiding the learner, giving encouragement, and providing periodic feedback and, hopefully, external motivation.

Using these concepts and knowing in advance that the vast majority of home study students are in the 25-35 year old group, we should look closely at problems facing the independent adult home study learner:

- The student may lack confidence in his or her ability to learn, especially if there is little contact with other students working on the same course.

- As a result, the student may be fearful of not doing well and feeling there will be a loss of face if all their work is not "perfect." This, then, may result in a delay in submitting work for the instructor's comments and guidance.

- The student is anxious about how to combine or reconcile study and family demands and demands of friends, neighbors, the boss, workmates, and the myriad of other things to do. There may be a guilty feeling about spending time "shut up alone with the books."

- Then, too, the student may quite simply feel too tired after a hard day's work to settle easily into a mental effort. The "attention span" of an exhausted adult learner is about 20 minutes!

As they ponder course design and weigh these factors, home study course developers should recognize other important traits in adult learners:

- The adult student has more experience, more knowledge and, above all, more motivation, than most school-age students. Many have lost the innocence that lets youth imagine that time stretches endlessly ahead. Most adult students know that if there is to be a more rewarding job or a more fulfilling role in life, there is little time to waste. A strong sense of purpose can more than make up for being out of practice as a student.

- While the adult student's ability to memorize facts may not be as good as that of the younger student, the ability to grasp and analyze underlying principles and the relationships between facts is better. This kind of understanding is far more valuable in post-high school education than the mere knowledge of facts.

- Numerous correspondence study research studies have shown that adult students learning at a distance can do just as well as younger students working in a classroom.

- Correspondence courses offer new ways to use free time creatively: kits, experiments, lectures on tapes, interactive learning, etc., all providing a multimedia approach that can effectively compete with TV watching.

For the most part, home study instruction relies on the factors listed above. Since most distance study students are adults, there is a happy marriage between home study and andragogy. Andragogy, or the science of helping adults learn, is based on these assumptions about adult learners:

1. As individuals age (20 to 70, anyway) they become less dependent and more self-directed;

2. Past individual experience helps adults establish self-identity and is a learning resource;

3. Adults' readiness to learn is related to the developmental tasks of their social roles; and

4. Adults are more **problem-centered,** and less subject-centered, in learning situations. This is one of the most important tenets in all of distance education.

Now, let's take a look at how home study course developers can meet the challenges and successfully teach learners at a distance. Since most courses use text materials as the primary information source, we will concentrate on how correspondence learning theory is applied in the writing of good text materials.

Text Design

Over the years home study school educators have accepted some basic principles of course and text design. Important among these are:

1. The home study text is not like the typical college text—it must do more than just provide information.

2. Home study courses must teach, explicate, anticipate questions and, in general, serve as teacher, facilitator, classroom mate, motivator, and be the source for needed information.

3. Good courses must come with built-in readings, assignments, evaluative instruments and inspiration for students to continue. They must challenge the fast learners and still hold the attention of, and teach, the less gifted.

4. Home study courses must teach the essential, current body of knowledge, skills and attitudes to meet course objectives using media that are economically feasible and educationally effective.

5. Home study instructors serve primarily as evaluators of achievement and responders to technical queries. Their role as dispensers of information, "lecture givers," is minimal. Their role as motivators of learners, via written or oral commentaries, is an important function.

The system of teaching by correspondence can be broken down into the following functions:

Function	Discussion[1]
Information Delivery	Materials are based on specially written texts and written for a specific audience. Home study authors and editors have a detailed profile analysis of their prospective students.
Elaboration and Explanation	Study guides and texts are uniquely designed for the special needs of thousands of students. Analysis of areas where students need additional information assists editors in making material more relevant.
Motivation	Motivation is consistently incorporated in home study text materials. It is also expanded by personal comments on graded assignments along with helpful model answers. Motivational letters are sent regularly.
Reinforcement	The student writes a question and sends it to the school. Each question receives a personal, detailed reply. Self-quizzes in study guides provide written answers for permanent reference and review.
Evaluation	A series of written examinations, evaluated personally and supplemented with model solution replies, are used frequently enough to measure learning. The student is not allowed to progress through any substantial amount of the course without a complete understanding of the material already covered.
Learning Completion	Making use of the graded test, learning should continue until the student attains a thorough grasp of the material. Review of the returned, graded paper and understanding the model

[1] Courtesy: Dr. Charles B. Marshall, The Hadley School for the Blind

Function	Discussion
	solutions are intrinsic parts of the learning cycle.
Application of Learning	The home study student frequently applies on the job what has been learned the night before. "Learn it today, apply it tomorrow," is a major motto of correspondence educators. Because most home study programs have specific career or vocational goals, learning tends to relate specifically to the job and may be applied immediately.

Finally, home study text design is predicated on these assumptions:

- The learner chooses when and where to study on his or her own.
- The learner is capable of independent, self-directed study without the props of peer group or continuous teacher interaction.
- The course is geared toward the general background, reading ability and interests of the broad range of enrollees.
- The course objectives match closely the learner's objectives, as well as match the promises of the school's advertising.
- The learner must feel able to "transcend the bondages of space and time" and learn effectively at a distance. The system, therefore, must appear to be individually designed for the learner and it must be clear that personal attention is readily available from "the school."
- The subject matter of the course must be able to be taught effectively at a distance.

Considering all of these concepts, the home study educator proceeds to construct course materials that meet the specific needs of mature, independent, self-directed learners. Modern home study courses are the result of decades of development of a rather practical, results-oriented approach to education. The principles, beliefs, theories and axioms discussed above are the results of years of collective thinking by home study educators.

Steps in Course Preparation

The steps in course preparation vary from school to school, and no one method is universally followed. However, some general guidelines are observed and these are outlined below.

A skeletal outline of the major steps in course development includes these steps in which home study developers:

1. Determine the subject matter to be presented: in-depth market research can be helpful, but do not ignore the importance of intuition, imagination and enthusiasm.

2. Determine the educational objectives for the course, the expected outcomes for graduates, and list the skills, knowledge and behavior changes to be imparted.

3. Prepare specially written lessons and modules.

4. Develop supplementary material such as how to study booklets, motivational tapes, study aids, etc. Study guides tell what the reading assignments are and how to proceed. Supplementary items should include encouragement letters, practice exercises, student projects, explanations of material not covered in the texts or lessons and, possibly, experimental kits.

5. Develop examinations for each study unit. These are generally designed as open-book examinations. They should teach as well as test. Furthermore, the examinations should be designed to facilitate correction and evaluation in an economical way. Above all, examinations should measure the extent to which the objectives of the course have been mastered.

6. Design, print, package and store the course for use.

Appendix A at the end of this chapter is a flow chart showing the steps followed in developing a typical course. Appendix B provides a suggested chart of accounts for a sample home study course budget.

This Handbook includes chapters which explain the "how to" of each of the major steps listed above.

Course Writing Techniques

In the actual writing of course texts, schools use one of these three methods:

First, the use of in-house specialists who, depending on the size of the school, may double as instructors. This technique is especially effective for revisions. Because of time priorities and the difficulty of keeping up in the field, this technique may not be practical for major rewrites or for new course development.

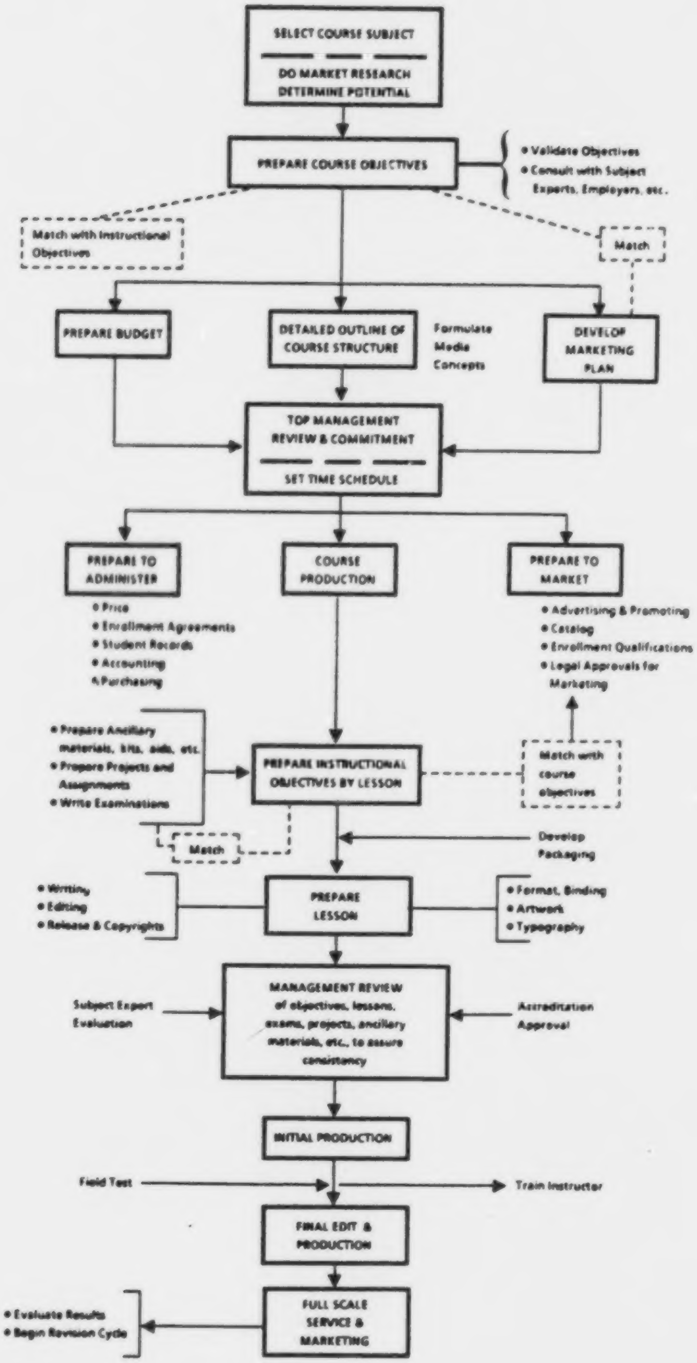
Second, and probably the most popular method, is the use of an "outside" subject matter specialist working closely with the school's educational director. When such specialists can be found, this method can be most effective. However, due to the extensive coordination, review and editing required, it can also be inefficient, not to mention frustrating. The amount and method of remuneration are important factors in the arrangements made with outside writers (see chapter four for further information on this subject).

The third method is the use of a publishing or consulting firm, under contract, to prepare a complete course or program. Experience, cost, coordination, time and availability of qualified "contractors" are factors which greatly limit the use of this method.

For the purposes of this *Handbook,* the authors have assumed that the readers intend to develop, or actually are developing, their own texts (options one and two above). By understanding the principles of home study text design, Directors of Education and other school executives are better able to work with and control the quality of the courses developed using any of the above methods.

Appendix A

Step-by-Step Development of a Typical Home Study Course


SELECT COURSE SUBJECT
DO MARKET RESEARCH
DETERMINE POTENTIAL
PREPARE COURSE OBJECTIVES
• Validate Objectives
• Consult with Subject Experts, Employers, etc.
Match with Instructional Objectives
Match
PREPARE BUDGET
DETAILED OUTLINE OF COURSE STRUCTURE
Formulate Media Concepts
DEVELOP MARKETING PLAN
TOP MANAGEMENT REVIEW & COMMITMENT
SET TIME SCHEDULE
PREPARE TO ADMINISTER
• Price
• Enrollment Agreements
• Student Records
• Accounting
• Purchasing
COURSE PRODUCTION
PREPARE TO MARKET
• Advertising & Promoting
• Catalog
• Enrollment Qualifications
• Legal Approvals for Marketing
• Prepare Ancillary materials, kits, aids, etc.
• Prepare Projects and Assignments
• Write Examinations
PREPARE INSTRUCTIONAL OBJECTIVES BY LESSON
Match with course objectives
Match
Develop Packaging
• Writing
• Editing
• Release & Copyrights
PREPARE LESSON
• Format, Binding
• Artwork
• Typography
Subject Expert Evaluation
MANAGEMENT REVIEW of objectives, lessons, exams, projects, ancillary materials, etc., to assure consistency
Accreditation Approval
INITIAL PRODUCTION
Field Test
Train Instructor
FINAL EDIT & PRODUCTION
FULL SCALE SERVICE & MARKETING
• Evaluate Results
• Begin Revision Cycle

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Appendix B

Suggested Chart of Accounts for Sample Home Study Course Budget*

1. **Market Research**—Testing the market, feasibility and determining scope of course.
2. **Fixed Costs**—
   - Salaries: Professional, Educational Director
     - Clerical
   - Overhead: General and administrative
     - Equipment, office
     - Supplies, office
     - Other direct costs
3. **Course Development Costs**—
   - Research: Publications
     - Travel
     - Consultants, Advisors
     - Laboratory and design work
   - Writing: Writers
     - Contract costs
   - Editing
   - Subject Review/Field Test
   - Typing
   - Art/Graphics/Photography
4. **Ancillary Materials Costs**—
   - Kits
   - Tapes
   - Equipment
   - Other (diplomas, envelopes)
5. **Reproduction Costs**—
   - Layout and design
   - Printing
   - Packaging

---

* This is not intended to be a proposed budget for every course, but a general guide to important budgetary line items to be considered.

Binding

6. **Legal Costs—**

    Copyright permissions
    Trademarks
    Course/catalog approvals

7. **Marketing Costs—**

    Detailed breakdown determined by marketing methods used

Chapter Two

Naming the Parts

by
Elizabeth R. Hatcher
Accrediting Coordinator
National Home Study Council

The Author

Betsy joined the National Home Study Council in 1984 as Accrediting Program Assistant. She was named Accrediting Coordinator in 1992. She is responsible for the coordination of the accrediting program, including the Accrediting Commission's course review and approval program. She received her Masters of Public Administration degree in 1988 from The George Washington University in Washington, D.C.

Introduction

For home study educators wanting to refresh their memories, or for those approaching the subject of home study course development for the first time, it is very useful to know the various components that make up a home study or distance education course—in other words, "naming the parts."

The balance of this chapter attempts to label the many parts of the "typical" home study course. Included at the end of this chapter is a glossary of essential terms related to home study course materials (Appendix A).

The Typical Course

There is certainly no one prototype or "typical" home study or correspondence course. Courses vary from school to school.

Some schools feature "hands-on" learning kits. Others use audio cassette tapes for instructor comments. Still others rely heavily on non-print media for instruction. Some employ videotapes. The combinations of media are numerous. This feature—creativity of product design—helps make home study an exciting method of teaching and a challenging career field.

In a 1992 survey of the National Home Study Council's member schools, the following profile emerged from the data provided by the 45 institutions which responded. These 45 institutions offer more than 500 courses to over 2 million students.

Here is the course profile:

- The average number of courses offered is 27
- The "most popular" course has an average 19 assignments/submissions, takes students 11 months to complete, and has a 63% lesson completion rate;
- The average non-start rate is 8%; average course graduation rate is 45%;
- It typically takes a student 9 hours to complete a lesson;
- Schools grade and return lessons within 3 days;
- The majority (51%) of courses offered are developed by both in-house staff and outside authors;
- The "most popular course" typically contains hardware/kits (20%), audio tapes (18%) and videotapes (11%);
- Each exam contains an average of 39 questions and the majority (69%) of examination questions are objective in style;
- Only 17% of schools offer mandatory resident training;
- 44% of the courses are either perfect bound or side/saddle stitched soft cover, 27% of the courses are 8 1/2 x 11 inch loose leaf bound, and only 9% of the courses are hard bound published texts;

- 73% of the schools use preprinted motivation letters;
- 87% of the schools have instructors who write comments on submissions; 71% of school instructors write personal letters to students; 29% of the schools use computer-generated personalized responses;
- 44% of the schools use toll-free telephone service for educational purposes; 38% have a fax exam service;
- 99% of the schools own their own computer;
- 71% of the schools use desktop publishing to prepare their courses; and
- Over half of the schools (67%) publish a newsletter for students.

The Major Components of a Course

We can divide home study courses into three very broad categories:

1. **Instructional Materials Group**—texts, lesson material, etc.
2. **Ancillary Materials Group**—kits, hardware and software, videotapes, request for help forms, etc.
3. **Educational Services Group**—evaluation, instructor comments, job assistance, etc.

Appendix B is a listing of the components of each of these three groups for a sample course. The balance of this article will focus on the Instructional Materials and Ancillary Materials Groups, i.e., the parts of the home study course.

The Instructional Materials Group

Within this group we have the bulk of the lesson materials. For example, 8 1/2 x 11 inch lesson texts in binders, hard bound texts, study guides, etc.—anything which contains subject matter knowledge to be imparted to the learner. The media employed to deliver the knowledge or information varies from school to school and even from lesson to lesson, but the mission remains unchanged for each lesson or study session:

- To present the instructional objective(s);
- To present the information, knowledge or skill;
- To have the student apply the knowledge or skill, or facilitate the desired behavioral change;
- To evaluate the learning achieved or behavior changed; and
- To motivate the student to continue to the next lesson.

Within the Instructional Materials Group, the core element is the lesson text itself. The text may be, for example, 8 1/2 x 11 inch sheets bound in a three-ring binder, or perhaps a 6 x 9 inch booklet, saddle stitched. It could even be a "block of text" on a computer video terminal. Below is a description of the major formats and materials in use today:

- **Loose-leaf vinyl binders** continue to be a widely used format by schools providing materials on a lesson-by-lesson basis. The advantages of easy revision and reproduction methods are evident. The student has a consolidated volume, or volumes, of all material at the end of the course. New material and information may be introduced immediately into courses—a "new sheet" may be sent to the student for immediate insertion in the student's binder of course material. On the other hand, the expense of mailing binders and the inconvenience of holding the binder to read it are negative aspects of this format.

- **Specially written paper bound booklets** are once again becoming increasingly popular today due to the wonders of desktop publishing which allows for cost-effective, low volume printing runs, with quick revision capability. No longer are three-ring binders the only way to get revised material to students in a quick, cost efficient manner. Typically, each booklet contains a single lesson/study assignment, either 8 1/2 x 11 inch or smaller sizes, side or saddle stitched. This concept was developed in the 1890s by Thomas J. Foster, founder of International Correspondence Schools, and still appears in the original pocket-size form, or in interesting variations. Such materials are easy to store, package, and ship to the student. Individual lessons may be easily revised since the booklets can be printed in limited quantities and replaced without undue budget strains. In addition, the same lessons may be used in many different courses, providing versatility for schools offering programs in the same subject field at different levels or different courses with related components.

- **Standard hard bound textbooks, workbooks and study guides** are often used by schools with high school programs and college level or degree awarding courses. Recognition of such courses by state and public school officials, who are oriented to resident schools, is facilitated when standard, recognized texts are used. The standard resident textbooks and workbooks are supplemented by specially prepared study guides and instructions to the student. Study guides prepared with standard texts usually include reading assignments, motivational materials, suggested outside readings, supplementary subject information, self-check quizzes and assignments, and sometimes "bound in" examinations. These ingredients make it a "home study course," and are the keys to its success.

The focus of the various chapters in this Handbook is on the Instructional Materials Group, specifically, the "how to" of producing the above listed materials.

Ancillary Materials Group

Supplementing the various types of lesson materials discussed above are a variety of media and materials. The purpose of ancillary materials are to:

- break up the tedium of the printed pages, and to add an additional dimension to the communication process (e.g., videotapes);
- provide the learner with a chance to apply his or her newfound skill or knowledge; and
- aid in the two-way communication between school and student.

The major types of media include:

- **Kits** to be assembled, with all the necessary tools and equipment, are frequently combined with text materials to enhance the effectiveness of correspondence instruction. Kits cover a wide gamut, as the following list indicates:

- Television and radio set kits
- Electronic test equipment assembly kits
- Tool kits for mechanics
- Compressor components for refrigeration servicepeople
- Computer system for a student in computer programming
- Locks, key blanks, tools, and a key making machine for a student locksmith
- Precious stones for a gemologist

Integration with the home study lessons, assignments, and examinations is the key here. Effectively used, such materials are invaluable adjuncts to the course.

- **Videotapes** are frequently employed as course developers acquire experience in cost effective "in-house" production techniques.

- **Audio cassette tapes** have long been a practical item in home study courses. Mass production has brought cassette tapes within the economic range of many schools. Tapes are used for two-way student-school communication, such as in a broadcasting or language course, and for instructor critiques of student work.

- **Diskettes** are now used in nearly every computer-based course, and "interactive" diskette training is a reality.

The Educational Services Group

A brief mention of a few of the components of this group may be helpful:

- Examination services, grading of papers

- Toll free telephone line, responding to student queries

- Administrative services, job assistance, notification of potential employers

- Remedial instruction, provision of additional information
- Shipment and receipt of course materials
- Other specialized student services

These are but a few of the services which comprise the total home study experience. They commence after the student has enrolled in a home study school. The nature of these components puts them outside the scope of this *Handbook*. (Please refer to the NHSC's *Home Study Student Services Handbook*, 1993 edition, for coverage of these topics.) They are, however, integral parts of the design and development of any good correspondence course.

Conclusion

Just knowing the names of all the parts of a home study course will not make you an expert in course design. Looking at actual course materials—which are readily obtainable—is a critical step. In most cases you need only call or visit an NHSC accredited school and request a sample lesson from the Director of Education. Attending NHSC Workshops and Conferences is a good way to network with your peers in home study, so that when you need information, you are more likely to get it.

The other chapters in this Handbook illustrate many of the components discussed above and shed additional light on just what a home study course is or should be. But while this Handbook is a good start, there is no substitute for actually developing a course, where necessity for action generates a great deal of practical understanding in a very short time.

Appendix A

Glossary of Selected Home Study Educational Terms

Answer Sheet (Response Form)

A form on which a student records responses to examination or test questions. Answer sheets are submitted to the school for grading, evaluation, and comments, and usually returned to the student.

Assignment

A part of organized material to be studied and/or performed by the student, according to required techniques and principles; a specific task to be performed by the student and submitted to the school for evaluation and comment.

Assignment Sheet

A written supplement telling students what material to study and in what order to study, as well as how and when to submit examinations or projects for evaluation.

Combination Course

A course consisting of a predominant home study portion and a residence portion. Normally, the home study portion precedes the residence period. Residence training is offered to provide students instruction on the use of specialized equipment, learning of manual skills or the application of certain techniques under supervision.

Completion Rate

The ratio of assignments completed to the total number of assignments contracted for in a fixed sample of students (note: *not* the same as graduation rate).

Course

A planned sequence of educational activity, leading to the acquisition of a skill or body of knowledge, usually over a predetermined period of time.

Degree

An authorized recognition conferred by an approved educational institution acknowledging the satisfactory completion of a course of study or program.

Diploma	A document given by an educational institution certifying the completion of a course of study.
Director of Education	The person in a home study school organization responsible for planning and organizing courses; selecting, preparing, and editing instructional texts and study guides; supervising instructional services and staff; conducting educational research; and performing other educational tasks as may be assigned.
Educational Records	Records and files maintained by a school for each student's educational activity, which include the student's name, address, basic education, date of enrollment, course, grades, current academic achievement, enrollment agreements, and other data.
Encouragement Program (Motivational Program)	Materials and procedures used by home study schools to motivate students to start a course of study, continue in the course, and graduate.
Examination (Test, Achievement Test)	That part of an assignment submitted for examination service, and designed to facilitate learning and to measure achievement. Examinations may include essay, true-false, completion and multiple-choice items, case studies, problems, or may consist of a finished product (artwork, project, article, etc.) which the student submits to the school.
Examination Service	The correction and evaluation of an examination, together with any necessary motivation and counseling, by an instructor.
Graduate	A person who has satisfied the prescribed requirements (e.g., assignments or examinations of an educational course or program) and has been awarded a certificate, diploma or degree affirming this.
Graduation Rate	Percentage of students in a fixed sample of a school's course or courses who have satisfactorily completed all of the prescribed requirements of a given course or program.

Home Study Course (Program, Training)	An organized series of instructional units designed to accomplish definite objectives by the home study method.
Home Study Education (Correspondence Education, Distance Education)	Education designed for students who live at a distance from the teaching institution. Ordinarily, printed and/or record materials are sent by mail, providing the student with structured units of information, assigned exercises for practice and examinations to measure achievement. These, in turn, are submitted to the teaching institution for evaluation and comment and subsequent return to the student.
Instructional Materials	Texts, tapes, work kits, equipment, supplies, tools and other materials used in a course to accommodate student and facilitate the training.
Instructional Service (Lesson Service, Assignment Service)	The advice, counsel, guidance and instruction requested by a student with an instruction-related problem and rendered by an instructor.
Instructional Unit	A section of a home study course usually consisting of an encouraging or motivating device, lesson materials and assignment, instructional service, examination and examination service.
Instructor (Tutor, Teacher, Faculty)	An individual who, qualified by education, training and experience, performs assignment, examination and personal service. He or she may assist in course research, writing and related activities.
Kit	A collection of predominantly non-textual materials included in a home study course to augment or enhance instruction. These materials may consist of tools, equipment, instruments, audio-visual aids, components, accessories and so forth.

Non-Start Rate

Percentage of enrolled and registered students in a fixed sample of a school's course or courses who did not submit any required examination or lesson assignment for grading or servicing. **Non-starts:** students who are disenrolled in a course after registration, after the applicable cooling-off period, but prior to matriculation.

Objective, Educational

A statement of what an education program can do for reasonably diligent students. For home study courses, objectives are goals or aims attainable through the correspondence study method and provide a description of skills to be acquired, information to be learned, training to be received, and attitudes and habits to be developed.

Remedial Instruction

Special instruction designed and delivered to alleviate deficiencies in basic skills (usually verbal and computational) needed to complete a course.

Revision File

A file containing suggested course revisions to update instructional material, correct errors, improve quality of instruction, clarify passages that may confuse students, and so forth.

Student Services

Supplemental activities and resources provided for a student or group of students by an educational institution. These services are designed to assist the student to perform to his or her potential, motivate a student to study, or respond to student questions of a non-academic nature.

Study Guide (Training Guide, Instructional Guide)

A written supplement to course materials designed to facilitate learning. It may include directions on how-to-study, suggested readings, research topics, self-check tests, problems and study projects, all of which are keyed to the basic course texts.

Appendix B

Components of a Mythical Home Study Course in "Gourmet Cooking"

A. **Instructional Materials Group**

1. 10 lessons, averaging 12 pages each, in 6 x 9 inch booklets
2. 10 written examinations, averaging 20 questions each, with Scantron answer cards
3. 20 self-check quizzes, 5 questions each, interspersed throughout lesson booklets
4. 10 at home projects, including recipe analysis, utensil experiments, etc.
5. 5 mailed in gourmet cooking projects, including signatures from 3 individuals, unrelated to student, attesting that a gourmet meal (of student's choice) had been served. Menu and dinner guests' comments must accompany signatures.

B. **Ancillary Materials Group**

1. Premium to enroll: well-known cookbook
2. Stimulus to return lesson one: apron with school logo
3. Stimulus to return lesson five: engraved menu cards
4. Stimulus to return final exam: handsome diploma
5. 6 videotapes with lectures and cooking demonstrations
6. Silver-plated wine tasting cup on chain

C. **Educational Services Group**

1. 10 request for help/technical inquiry forms (preprinted)
2. 20 pre-addressed envelopes
3. Final examination package
4. Toll free telephone card
5. Information on conducting a job search

Chapter Three

Developing the Modern Home Study Course

by
Louis E. Frenzel
Teknowledgy Sources, Inc.

The Author

Lou Frenzel is a highly experienced and well known home study educator. His background includes working with NRI Schools, Heathkit Educational Systems, and developing course products for a number of home study schools and other training organizations.

Lou's most recent article entitled "The ABC's of Instructional Technology for Correspondence Study," which appeared in the Sping 1993 issue of the NHSC News, *is included in this chapter as an appendix. Lou has also spoken at several NHSC Conferences and Workshops. Presently he is President of his own company, Teknowledgy Sources, Inc., in Parkland, Florida.*

Introduction

The purpose of this chapter is to summarize the key steps in developing a modern home study course. The focus is on creating superior printed lessons and audio tapes. Video and computer-based instructional materials are included. It is hoped that this chapter will provide Educational Directors, course developers, and others with some new insights into course development so that the highest quality programs can be produced.

Perform a Needs Analysis

Course development begins by analyzing the student's needs.

This research identifies the reasons for the instruction and specifically what must be taught. This is essential for career job programs as it will identify what employers **really** want and need. For example, a job analysis takes a close look at individuals employed in a specific job to determine what they do and what they need to know to perform competently. If the training is not job-oriented, then a task analysis can be conducted to determine just what the student is expected to know and be able to do upon completion of the course.

A needs analysis is generally done by interviewing employees that are doing the work or individuals who are participating in the target activities. Observation of performance is another useful technique. A research of relevant literature may also be helpful. The result of the needs analysis is a detailed list of specific activities, tasks, duties and needs. An indication of desired performance levels should be given for each. From this list, you can determine exactly what must be taught.

There is considerable evidence that most home study schools do **not** carry out this important part of course development. In some cases, the schools assume that they already know what must be taught, or guess. However, if the school has no experience in the field of interest, it is best to do the analysis as it will often reveal important subjects and skills that may be overlooked. The quality of the course and how well it meets the needs of the student depends upon a proper analysis. Giving the student exactly what he or she needs produces a more satisfied student. Further, a needs analysis usually results in a shorter, more efficient course because only necessary topics are included. Such a well-planned course is also less expensive to develop.

Develop Learning Objectives

From the needs analysis, specific learning objectives can be developed. Learning objectives are simple statements of what the student will know and be able to do once he or she has completed the course. The instructional objectives are derived from the information developed during the needs analysis. The objectives should be stated in behavioral terms so that student performance can be measured.

Since learning objectives are covered elsewhere in Chapter Five they will not be discussed further in this chapter. Objectives are extremely important because they are the basis of the course content. Be sure to present the objectives in the course materials as students want—and deserve—to know what they will be learning.

Create a Course Outline

From the needs analysis and learning objectives, you can develop a comprehensive course outline. The purpose of the outline is to divide the subject matter into a number of instructional units. These instructional units may be printed lessons, lab experiments, audio tapes, or some other presentation. The outline defines the content of these instructional units and their sequence.

The initial outline is simply a listing of the main instructional unit titles. The idea is to partition the material so that the necessary subjects are covered in the right order. Once this brief outline is complete, a detailed outline of each instructional unit is constructed. Keep in mind that the content of these instructional units must match the needs analysis and course objectives.

Most home study courses are subdivided into study units traditionally called "lessons." A lesson is typically a printed text roughly the size of a textbook chapter, about 10 to 70 pages in length. Most course outlines, therefore, are lesson outlines. On the other hand, the study units may be whatever you define them to be, such as four page units, audio tapes or video segments.

Another approach is to use the method that colleges and universities use. Instead of calling the entire instructional offering a course, call it a "program." Then, construct a program made up of individual courses. For example, some schools offer an Associate degree program made up of individual courses just as you would expect to see in a community college. First, construct a course outline, then develop outlines for each course. Each course will then be comprised of lessons and other instructional units.

Select the Media

At this point, you should have a good planning document to give to your course developers. This document contains any job, task or needs analysis, a set of learning objectives, and a comprehensive course and/or lesson outline. With this material, the course developers can begin creating the instructional units. But before that happens, consideration should be given to the media which will be used to present the course.

Most home study courses use written texts. However, serious consideration should also be given to using other media, such as audio, video, or computer-based instructional (CBI) software. These alternative media can greatly improve a home study course by making it more interesting, fast-paced, and enjoyable. Also, audio, video, or CBI software is often superior to print for presenting some types of materials.

a. **Print**—Printed lessons are still the best way to present virtually any kind of instructional material. Lesson texts are fast and easy to develop and considerable graphical information can be presented economically this way. Printed texts also offer random access to the subject material.

   On the other hand, we are not a nation of readers. While almost every one learns to read in school, statistics indicate that most people are not good or regular readers. This is one of the reasons why so many people do not take home study courses. They do not like to read or they read poorly. Most people get the bulk of their information by radio, TV and telephone. Despite their many advantages, printed texts are not the best way to teach some subjects. This is especially true of manual or mechanical skills. These and other subjects may be best taught by video.

b. **Audio**—The common audio cassette is widely used for music and instructional purposes. Many self-instructional programs and motivational tape sets are done entirely in audio. And many books, especially popular novels, are available in audio format. This is an extremely low cost and effective media. In quantity, 60-minute audio tapes can be reproduced for well under $1. Often this is much cheaper than the printing of an equivalent text. Today, virtually everyone owns a cassette player of some sort, whether it's in a stereo receiver, a portable Walkman, or an auto sound system. Audio tapes are an interesting, highly effective, and economical way to implement or supplement a course.

   Another fast-rising audio media is the compact disc or CD. It is rapidly replacing the cassette in music distribution and will also become a viable instructional media in the future.

c. **Video**—At one time video tapes were far too expensive to be used in the average home study course. Video development costs were high, but more importantly, the average individual did not have access to a VCR. Today, the VCR is a common consumer electronic product. It is estimated that over 75% of all U.S. homes now contain a VCR. This makes home study courses in video format very practical.

Video is by far the best medium for self-instruction. In fact, it has become "the" primary medium for use in business, industry, government and military training. Most self-instructional materials are now put on video tape or use interactive video disks. Video is superior because it can present both audible and visual information in a compact and highly efficient manner. Most people like to watch TV; therefore, they are comfortable with video instruction. Video can also be made interactive by requiring the student to stop the tape after certain presentations to answer questions, solve problems, or otherwise become involved with the material. Good video programs are usually accompanied by a workbook that includes summaries, reviews, quizzes, and other information.

Today, despite its popularity and overall effectiveness, video is not used in many home study courses. This is unfortunate because it is an ideal instructional tool. Furthermore, there are literally thousands of available video tapes that could be used as the basis for complete home study courses or as excellent "enrichment supplements."

Developing video learning materials is beyond the scope of this chapter, but video should certainly be considered as a viable alternative media in modern home study courses.

d. **Accessories**—Accessories refer to all of the hardware, software, and other materials that schools include with a course to help teach the subject. Accessories include tools, instruments, and objects to assemble, observe, or study. Many subjects are highly hardware or materials oriented and learning comes best from actual hands-on experience. Accessories make a course far more exciting, practical and realistic. And they add value, providing marketing benefits as well as making instruction more effective.

The best way to get a student to start and complete a home study course is to get him or her **involved in** the subject. Involvement means a lot more than reading 500 pages of text material. Many students take courses to learn new skills and techniques. This means the student wants to learn how to repair electronic equipment, take photographs, work with locks, identify fabrics, or navigate a small boat—not just read about it.

All accessories should be accompanied by instructional or "lab" manuals that guide the student in the use of the materials supplied. Such manuals will outline experiments or demonstrations to be performed, projects to be implemented, or activities that lead to improved knowledge and skills.

Create the Written Text

The printed lesson is the mainstay of most home study courses. Lessons are extremely important because through them the student not only learns but also gains an image of the school. The quality and effectiveness of the lessons will reflect directly on the school. In home study, the materials **are** the school.

Home study lessons must be written with the student in mind. The student will not, in most cases, have direct contact with an instructor or classmates. For that reason, the written materials must be thorough and unambiguous. Unlike many textbooks which are written primarily to supplement a classroom course, home study texts must stand alone as the primary means of learning in a home study course. They should take nothing for granted, especially not a student's prior knowledge.

With these important facts in mind, here are some helpful tips for writing good home study lessons:

a. The Important First Lesson

The first thing that a student sees of a home study course is Lesson number 1. It should be designed to not only make a good first impression, but also to get the student off to a good start. Only a small percentage of those who enroll in a home study course ever complete all of it. And another small percentage never start at all. Boring, hard-to-read lessons are responsible for many non-starts, dropouts and loss of motivation. The first lesson should give the student a good feeling so that he or she will want to start and go on.

The first lesson must be lively and interesting. It should focus on the main subject of interest and tease the student with things to come. Above all, the lesson should be short. Reading a lengthy tome can give the wrong impression. The first lesson is a special piece that will make or break the course. Considerable attention must be given to it.

b. Create Good Opening Copy

Use some of the techniques employed in newspaper and magazine writing and the writing of novels to help grab the student's attention. In your opening paragraphs, look for the "hook" that will stimulate the student's interest and motivate him or her to keep reading. All you have to do is find the topic that will create the most interest. Embellish it with an important statistic or ask a provocative question. In any case, spend some time in creating those first few important paragraphs to capture the student's interest and motivate him or her to keep reading.

c. Use Plenty of Headings and Subheadings

Nothing is more deadly than page after page of written text with no breaks. Continuous copy says to the student "boredom and drudgery." An easy way to avoid this problem is simply to divide the text into short segments or "chunks." Each should have a heading or a subheading telling what the segment is about. Such headings provide a superior visual impact by breaking up the continuous text. Further, the student can glance at the headings and subheadings and get a good preview of what is to come. Headings and subheadings also make it easier to use the text for reference and review.

d. Use Graphics and Illustrations

Studies regarding the creation of printed material for self-instruction indicate that one of the most effective methods of teaching is through illustrations. Illustrations, like headings and subheadings, break up long strings of continuous text. In many cases, a good illustration can replace the text and communicate the desired information more quickly and effectively. Anytime you can use a photo, line drawing, chart, graph or table by all means do so. Most course developers find that it is faster and easier to write a lot of text rather than create good illustrations. It's a fact that it does take longer to develop graphical material, but its effectiveness and visual impact makes it worthwhile.

e. Use Sidebars

A sidebar is a block of text that is sometimes accompanied by an illustration that is set off in a shaded or outlined box but located near the main flow of the text. Magazines and newspapers use sidebars to provide supplementary information related to the main topic but set off separately. Sidebars are used to supply historical and background information, remedial and prerequisite information, examples and case studies, and information that is nice to know rather than essential to know. Information such as this does not have to be in the main flow of the text. By setting it off in a sidebar, it becomes optional or special. Just as important, it has the visual impact of an illustration as it breaks up those long pages of text.

f. Keep the Lessons Short

There is nothing more depressing to a student than to have to wade through a huge text! Try to make each lesson as short as possible. Ideally, the average 8 1/2 x 11-inch printed lesson should have fewer than 20 pages and certainly no more than 30. Take a close look at each lesson to see if it is possible to subdivide it to create shorter, easier lessons. A student will read a short lesson before he or she will attempt a longer one. The student will get finished with a shorter lesson faster and will, therefore, have a better sense of movement and accomplishment. Success such as this encourages students to move on to the next lesson. Brevity is an important characteristic of a home study lesson. If you let the needs analysis and objectives guide you, you will know exactly what to put in the lesson and what to leave out. Just remember: in a home study lesson, less is usually more.

g. Writing Tips

Here is a list of some important guidelines to follow in writing the lesson:

1. **Choose words carefully.** Use clear, familiar words rather than long, complex and unusual words, Avoid the use of jargon unless it is pertinent to the subject matter.

2. **Use short, simple sentences.** Long, complex sentences are hard to read and understand. Divide long sentences into shorter ones.

3. **Check the reading level.** There are several software-based formulas used for testing the reading level of a text. These are described in Chapter Seven of this Handbook. Just remember that the lower the reading level, the faster the text is to read and the easier it is to understand. If you have used clear, familiar words and kept your sentences short and simple, then your reading level should be relatively low. By making the reading level below the 8th grade level, regardless of the subject or audience, the subject matter will be more easily learned.

4. **Use plenty of examples.** When presenting information, theories and techniques, give plenty of real-world examples. Students like to hear about actual applications of the information they are likely to encounter. By giving examples and working typical problems, the student will learn faster and stay interested.

5. **Refer to the active, not the passive, voice in writing.** The active voice is usually more lively and interesting. The passive voice comes from using any form of the verb "to be." This means that sentences using the verbs "is, are, was, were, be, being," and "been" are giveaways to the passive voice. Eliminate such verbs and the resulting text will be easier to read. The text will be more conversational and you will have a tendency to use the pronoun "you" which makes the text more friendly and conversational.

h. Consider Special Formats

While most lessons will be written in standard text form, unique presentations may be beneficial. Some examples are:

- Programmed Instruction (PI)—PI is not currently popular, but it is highly effective in presenting some types of material. It is a 30-year-old technique in which difficult, tedious or technical material is presented in a continuous self-testing mode. It is perfect for home study, but usually overlooked.

- Computer-Based Instruction (CBI)—CBI is essentially P.I. in software format. Many students own or have access to personal computers that serve as teaching machines to present CBI materials. Special authoring software is widely available to develop CBI making it faster, easier and more inexpensive than ever. Today, CBI software is an excellent alternative media.

- Information Mapping—This is a highly efficient and compact method of presenting facts or knowledge. Mapping techniques help identify the important subjects and compress them into highly effective educational presentations.
- Unusual Arrangements—Feel free to innovate. An example is a home study course where each lesson is only four pages long. The material is subdivided into very short lessons that are fast and easy to read.

i. Quizzes and Examinations

The thing that sets a home study lesson apart from a standard text is the significant use of self-quizzes and examinations. By providing the student with plenty of opportunity to answer questions and solve problems, he or she will learn faster. Self-test quizzes with answers give a student valuable feedback on his or her progress. Such quizzes also provide a key means of summarizing and reviewing the main information to be learned. Examinations truly improve the instruction.

Self-quizzes should be used frequently throughout the text, primarily after major sections. Almost any type of testing technique can be used. Questions can be of the true/false, completion, matching, or multiple choice variety. Essay questions are usually not good for self-instructional programs but there is nothing wrong with questions requiring one or two word answers.

Each lesson will typically end with an examination. The multiple choice type is best because it is easier to grade by hand, scanner or computer. Multiple choice questions fit practically any type of subject matter and provide superior testing of student understanding. Attempt to create questions that force the student to apply what he or she has learned. Questions that have the student simply repeat facts and figures are OK, at times, but questions that require the use of the information improves understanding.

j. Include a Glossary

A glossary is a short, to-the-point listing of relevant words and terms related to the subject matter. It is not as comprehensive as a dictionary and simply provides the brief meanings of important terms. A glossary is particularly important in self-instruction when a student is learning a subject for the first time. Much of learning is associated with the understanding of new words and terminology. If a student learns and understands the vocabulary of the subject, the rest is relatively easy. While most of the words and terms will be explained in the text, others may not. By providing a glossary, you give the student another resource to assist in his or her own learning.

There are several ways to create a glossary. New terms related to an individual lesson can be collected and placed at the end of the lesson. Otherwise, all of the relevant terms in the course can be collected and alphabetized to form a complete course glossary.

Many special dictionaries and glossaries are regularly published on a variety of subjects. A search of the literature will often reveal a book that can be used in lieu of creating a special glossary. Such a book should be a key element in your program, and it should be supplied as early as possible. Despite the cost of such a book, it can often keep a student studying and greatly minimize drops and letters or phone calls.

k. Validate the Material

Once the lessons and other materials have been created, you should validate it. That is, you should test it. If you truly want an effective program, try it out first on real students. In a formal validation program, a control group is set up and used to review and critique the material. The feedback gained from this process is invaluable in correcting problems and finding defects in the material and the teaching process.

Validation is not common in most schools as it takes time and costs money. Yet, so often the material fails and is responsible for high drop out rates and non-starts. Validation can minimize these problems and improve the instruction considerably.

If you do not validate your course materials, at least monitor the student progress through the materials to detect problems, delays, and resistance to completion. Look for low exam grades, higher than normal inquiries from students, and slow lesson completion. Then quickly fix any problems.

Create Audio Tapes

Audio lessons are just as easy to create as written lessons. Most of the guidelines given earlier also apply to audio lessons. Here are some specific guidelines for creating good audio lessons:

a. Select the Audio Format

There are four basic audio formats:

- Lecture
- Two-voice narration
- Conversation/Interview
- Audio Tutorial

The lecture is probably the most common but is also the least effective and can be the most boring. For best results, only superior, "studio quality" motivational speakers should be used.

The two-voice format uses two persons, usually a male and female, to present the material. Two voices help break the material into shorter, more lively segments. It is less boring and much more effective.

The conversation/interview format uses two or more speakers to add variety. The presentation can be more casual and conversational, thus more interesting. However, it is less efficient than a formal interview or panel discussion where the presentation can be better planned, and more focused and efficiently presented.

Audio tutorial is a formal instructional process that includes student interaction. It is, in effect, audio P.I. The material is presented in short segments, usually by two voices, and asks for frequent student participation. The student stops the tape, answers questions, solves problems, or otherwise responds to the presentation. Audio tutorial is highly effective but more difficult to create.

b. Keep It Short

The average attention span of an adult student is short—15 to 20 minutes. So keep the instructional segments short, regardless of the format. Divide the material into shorter, 5 to 7-minute segments to keep the attention level high.

c. Use Illustrations

Most audio learning programs do not use illustrations. They present word pictures instead. But for certain types of material, the presentation can be so much more effective if photos, line drawings, block diagrams, charts, or other graphics materials are included. The result is a "slide"-tape show that really gets the message across.

d. Use Audio to Supplement the Accessories

Instead of a lab manual, use audio to talk a student through any experiments, demos, or projects. Printed materials and illustrations can be included where helpful.

e. Don't Forget Exams

Audio instruction should also have self-test quizzes and exams to be graded. These should be in print format.

f. Include a Study Guide

Since audio tapes are serial access rather than random access like a printed text, it is more difficult to locate specific segments. This can be overcome by outlining the content in detail on the tape label and in a printed study guide. Also, ask the student to use the counter on the tape player to keep track of each section.

The study guide also helps make review and reference easier as it should contain short summaries and highlights of the audio segments that will minimize the searching for and repeating of audio segments.

g. Use Professional Speakers

Many people think they have a good speaking voice, but just the opposite is true. A superior audio tape requires good voice presentation techniques. The only way to avoid bad, amateurish recordings is to use experienced professionals.

h. Use Audio with CBI

Most personal computers can be equipped with audio capability. Short audio segments can be stored along with the instructional software text and graphics. This adds the ability to narrate or annotate the computer video presentation. This capability is referred to as multimedia and many CBI authoring programs support the use of audio.

Package the Course Attractively

Packaging refers to how the lessons are physically implemented. Most home study schools use either loose-leaf lessons or individually printed lessons with separate covers. The most common size is the 8 1/2 x 11-inch page. Care should be taken to make these as attractive as possible. Attention should be given to page layout, type style, and illustrations. Good graphic design procedures should be used in creating a page design. It is best to use plenty of white space to avoid a heavy, cluttered look on the page.

When audio tapes are used, include a cassette holder and binder that can also contain any related printed study guides.

And don't forget the desirability of using color. Two-color designs are quite popular in home study courses and the extra color adds flexibility in producing clear illustrations. By using screens, the effect of multiple colors is created. The second color also makes the page far more interesting and appealing to the reader.

Home study lessons do not have to be slick and expensive. But they should have a high quality look and feel. The student's first impression will come from visual contact with the lesson material and it must be favorable. If it is, the student will read it or listen to it. **And a studying student is a paying student.** High quality lesson materials will give the student the knowledge and skills he or she desires and will create the desired revenue and profit for the school.

Another packaging approach is to include a box or other container in which to keep or display the course materials. This may be a slip case for texts or binders, a portfolio, or carrying case. Even inexpensive briefcases have been used to package course materials. Attractive graphics and design should be used in the school colors.

Using Existing Materials to Implement Home Study Programs

Traditionally, most private home study schools develop their own course materials. The larger schools typically have an in-house development staff, while smaller schools usually rely upon outside free lance authors. This practice continues today, although there is growing evidence that schools are more open to alternative methods.

Another way to implement a home study program is to use existing materials. Because of the large number of publishers and training companies, it is possible for a home study school to build entire programs from their instructional products. Yet, few schools do. Because of the high cost and long development time in creating original course materials, schools should take another look at the process of creating new programs with existing products.

Most subjects taught by home study schools are also taught by resident schools. As a result, there are numerous textbooks, lab manuals, videos, and other materials available off the shelf. Many of these are suitable for home study.

On the other hand, there is often good reason for a home study school to create its own materials. For example, the school may have unique experience and knowledge in a field where few if any textbooks or other materials are available. In which case, the school usually has no choice but to create its own lesson texts, videos, or whatever.

When contemplating and planning a new program, school development personnel should give serious consideration to the option of using available products as it offers these major benefits:

a. Saves time. Development time can be reduced by orders of magnitude.

b. Lower development costs. Less development time means lower development costs. It also means less in-house and free lance staff and the related support functions and services such as type setting and illustrating.

c. Permits the school to offer the program sooner than if a "from scratch" approach is taken. Getting the course on the market sooner will generate income sooner and meet student needs quicker.

d. No in-house maintenance and updating is required. Simply adopt the next edition of a text or any revised materials when they become available.

Listed below are the steps in creating a course from existing materials:

1. Create the objectives and outline as described earlier.

2. Look for one or more suitable textbooks. Books and lesson material are at the heart of most home study programs. And with the huge number of book publishers, there are usually many options. Visit book stores, call for catalogs, and seek out visits from book publisher sales reps. Obtain review copies, then narrow down your options. Some of the key things to look for in a book for home study are:

   a. Written for self study. Many books are written for use in a classroom situation. These may or may not be good for independent instruction. Then again, there are many other books that are fine for self study.

   b. Check the reading level. The lower the better. Eighth grade or less is best.

   c. Look for good illustrations, photos and other graphics. Heavily illustrated books are far more interesting and instructive.

   d. Select books that have self test questions, practice problems, quizzes and other evaluation exercises. These are essential for self learning. And these will save you the trouble of developing quiz items yourself.

   e. Keep in mind that you may not find a single book that covers all that you wish to include. It may take two or more books to do the job. While that increases costs, it adds to the perceived value, the diversity of coverage and the perspective provided by several authors.

3. Supply a good dictionary, glossary or encyclopedia of the field. This makes a great reference piece for students and can save the student hours of frustration and minimize the need for school contacts.

4. Evaluate any supplemental workbooks, lab manuals and other materials that are designed to accompany the books. Don't overlook the instructor's guides available with many texts. These can give you additional ideas about structuring the program. An example is to acquire the overhead transparency masters that are often available. You can supply these in printed form and add an audio tape of your own design to narrate the illustrations.

5. Seek out supplementary materials. Look for videos, audio tapes, software, and packages of relevant accessories.

6. Create a course study guide. A study guide is a document that the school creates to pull together, coordinate and sequence the material you have collected. The study guide in its simplest form is just an assignment list directing the student to the various reading and studying activities. In a more complex form, it might contain supplementary materials and cover topics not included in the texts or elsewhere. Here are some of the things that appear in most study guides:

    a. List of materials supplied with the course.

    b. Course objectives.

    c. Study assignments and sequence.

    d. Enhancement topics such as relevant glossary and remedial or recent relevant materials in sidebars.

    e. Self test quizzes or practice if not available in the textbooks.

    f. Lesson, assignment and final exams. These are the exams to be sent to the school for grading.

    g. Chart for recording student schedule, progress, time involved, grades, etc.

A few private home study schools do use the "textbook and study guide" approach to implementing a course. They have found it to be just as effective as shorter lesson booklets and other approaches. The key is in selecting the best book or several textbooks and creating a good study guide. Keep in mind, too, that most of the hundreds of traditional colleges and universities that have distance education, extension, a home study departments use this approach almost exclusively for undergraduate credit courses.

There are several reasons why home study schools have not extensively used the textbook and study guide approach. First, many home study educators fear that the average student will be frightened and discouraged by receiving a big textbook. That is more of a perceived problem than a real one. High school and college students are not intimidated by such texts, so why should adult home study students be put off?

Another fear is that the value of the course may be perceived to be less with a textbook. The student may feel that he or she could have bought the book themselves for less money. This too is usually an unfounded problem. The student knows that the book is just part of an overall program of materials and services offered by the school. It is up to the school to generate the right image and mystique to overcome or prevent this problem. In addition, the school should include as many other materials as necessary and desirable such as a study guide and perhaps one or more other books, videos, etc. Extra materials more than make up for any perceived value problem.

Finally, many schools find that the cost of the textbook is too high to justify shipping it to students "up front." This is a real problem. Good textbooks cost anywhere from $30 to $120. That is a great deal of cost to invest in an initial shipment of materials to the student. Even with school discounts most publishers give, the cost is often prohibitive. This is not a problem with shorter, less expensive lesson booklets as they are cheaper and fewer of them are given in the beginning. Thus, the cost may be spread out over a longer period of time.

One way to overcome this problem is to ask the publisher to subdivide, customize and private label the books for you. In the past, most publishers would not do this. Today, with the greater competition between publishers and the newer electronic publishing methods, publishers are doing this more and more. It is possible for publishers to break up texts into chapters or other segments and repackage them in smaller and cheaper lesson booklets. "Custom publishing" is a growing trend, so do not overlook it as a viable option.

Conclusion

The steps in developing a modern home study course are the result of many years of collective applied research and trial and error by many generations of correspondence study educators. There is no longer any "trade secret" mystery about how a first rate course can be developed. The steps we have discussed above are described in other chapters in this Handbook. Learn from these chapters and apply the time-tested principles which are contained in them.

The following appendix is a glossary primer on instructional technology which appeared in the Spring 1993 issue of the *NHSC News.* Perhaps it will help you discover, investigate and adopt one or more techniques that may help you improve your distance education programs.

Appendix

The ABC's of Instructional Technology for Correspondence Study

High Tech Methods for Improving Home Study Learning and Student Retention

by Louis E. Frenzel
Teknowledge Sources, Inc.
Parkland, Florida

Louis E. Frenzel

(Editor's Note: Lou Frenzel is a highly experienced and well known home study educator. His background includes working with NRI Schools, Heathkit Educational Systems, and developing course products for a number of home study schools and other training organizations. NHSC News *is delighted to bring you this article from a home study veteran.)*

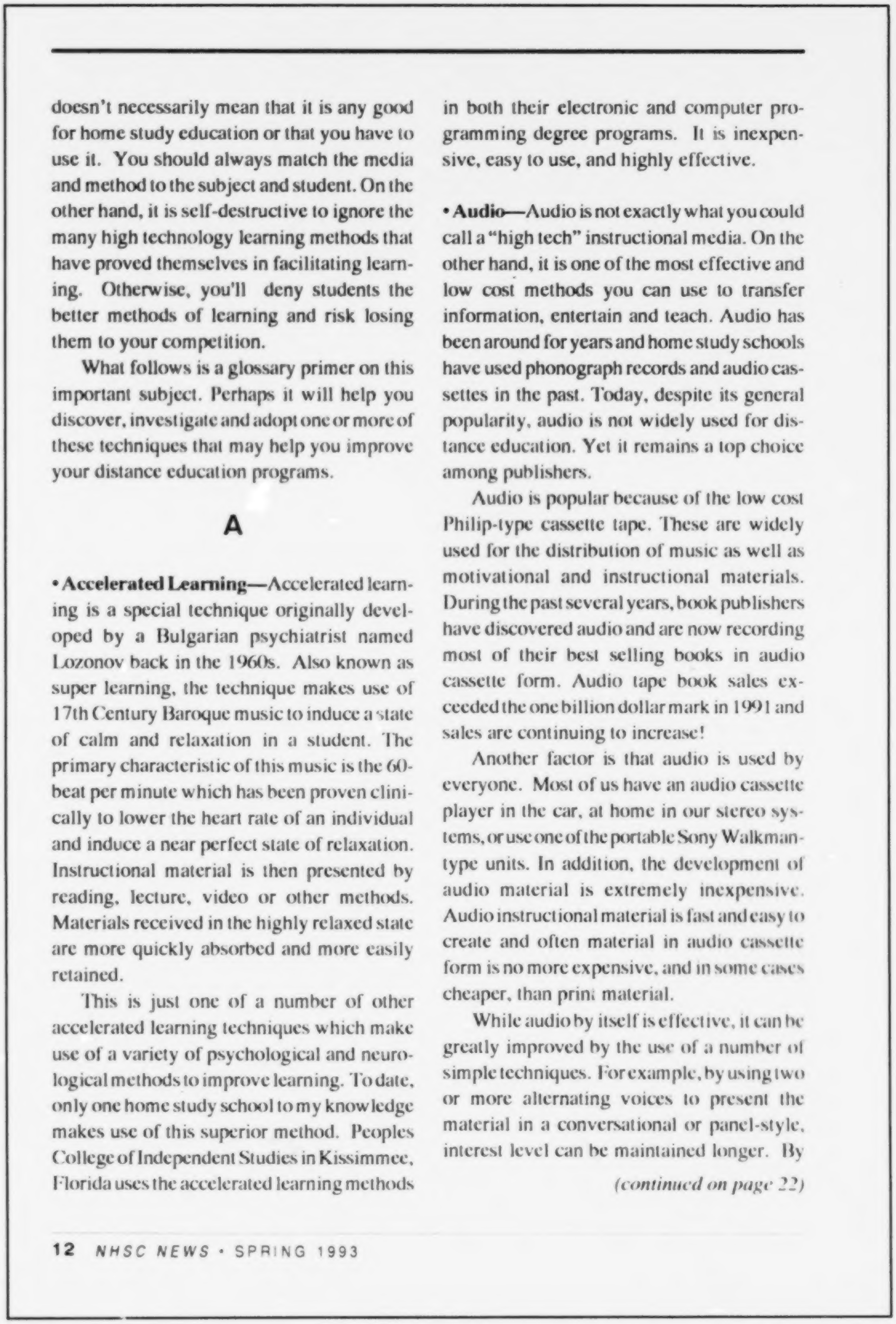
Introduction

Scenario #1: A student places a transducer helmet on his head, then plugs the transducer unit into the telephone. The student then dials the home study school. A computer at the school answers, and the student enters the number of the lesson he wishes to receive. The student then relaxes on a couch. The computer downloads the lesson material to the transducer helmet which directly transfers the knowledge into the student's brain. Later, the student is tested and makes 100% on the exam.

Scenario #2: A student takes a mind-expanding pill supplied by the home study school, then waits several hours. Once the pill has taken effect, the student inserts a video laser disc in the player, then relaxes on a couch in front of the large screen wall TV set. Educational material is then presented to the student. The pill permits virtually 100% absorption and retention of the knowledge and information on the disc.

This is high tech distance education. Of course, the scenarios described above are not available today, but they might be in the future. On the other hand, there are literally dozens of high technology methods, equipment and systems that you can use to greatly improve your distance education programs RIGHT NOW!

Just because a technology is available



doesn't necessarily mean that it is any good for home study education or that you have to use it. You should always match the media and method to the subject and student. On the other hand, it is self-destructive to ignore the many high technology learning methods that have proved themselves in facilitating learning. Otherwise, you'll deny students the better methods of learning and risk losing them to your competition.

What follows is a glossary primer on this important subject. Perhaps it will help you discover, investigate and adopt one or more of these techniques that may help you improve your distance education programs.

A

• **Accelerated Learning**—Accelerated learning is a special technique originally developed by a Bulgarian psychiatrist named Lozonov back in the 1960s. Also known as super learning, the technique makes use of 17th Century Baroque music to induce a state of calm and relaxation in a student. The primary characteristic of this music is the 60-beat per minute which has been proven clinically to lower the heart rate of an individual and induce a near perfect state of relaxation. Instructional material is then presented by reading, lecture, video or other methods. Materials received in the highly relaxed state are more quickly absorbed and more easily retained.

This is just one of a number of other accelerated learning techniques which make use of a variety of psychological and neurological methods to improve learning. To date, only one home study school to my knowledge makes use of this superior method. Peoples College of Independent Studies in Kissimmee, Florida uses the accelerated learning methods in both their electronic and computer programming degree programs. It is inexpensive, easy to use, and highly effective.

• **Audio**—Audio is not exactly what you could call a "high tech" instructional media. On the other hand, it is one of the most effective and low cost methods you can use to transfer information, entertain and teach. Audio has been around for years and home study schools have used phonograph records and audio cassettes in the past. Today, despite its general popularity, audio is not widely used for distance education. Yet it remains a top choice among publishers.

Audio is popular because of the low cost Philip-type cassette tape. These are widely used for the distribution of music as well as motivational and instructional materials. During the past several years, book publishers have discovered audio and are now recording most of their best selling books in audio cassette form. Audio tape book sales exceeded the one billion dollar mark in 1991 and sales are continuing to increase!

Another factor is that audio is used by everyone. Most of us have an audio cassette player in the car, at home in our stereo systems, or use one of the portable Sony Walkman-type units. In addition, the development of audio material is extremely inexpensive. Audio instructional material is fast and easy to create and often material in audio cassette form is no more expensive, and in some cases cheaper, than print material.

While audio by itself is effective, it can be greatly improved by the use of a number of simple techniques. For example, by using two or more alternating voices to present the material in a conversational or panel-style, interest level can be maintained longer. By

(continued on page 22)

(The ABC's of Instructional Technology, cont'd. from page 12)

combining the audio with printed visuals further instructional improvements can be made.

• **Audio Tutorial** —This superior technique is audio programmed instruction. It breaks the material to be learned into short segments or frames. When combined with a written workbook, this method is particularly superior in teaching many types of subjects because of its interactivity.

B

• **Biofeedback**—Biofeedback is a technique used to induce a state of relaxation into an individual. By monitoring various bodily functions, such as heart rate, (EKG or ECG), muscle tension (EMG), and various brain waves with the use of simple electronic equipment, individuals can relax themselves and otherwise gain more control over certain bodily functions and brain activity. While biofeedback has not been extensively used in education, much research has been done. The electronic equipment used to induce the state of relaxation is simple and low in cost. Relaxation improves learning and retention. This is certainly an area for pioneering for some home study schools seeking new and better learning methods.

• **Bulletin Board Systems (BBS)** —A bulletin board system is a personal computer-based communications system that individuals may access with their telephones. A BBS operator sets up a computer system with special communications software. The computer is connected to the telephone lines by a modem. Other individuals with personal computers and modems can call the BBS system and be connected to the computer. The BBS systems software permits individuals to communicate by leaving written messages for one another. In addition, bulletin board systems may also be used to distribute instructional or informational items. Even software stored in the BBS computer can be downloaded to a user's system and vice versa.

Bulletin board systems are extremely popular. There are several thousand in the U.S. Because of the very low cost of such a system, they are easily implemented in a home study school. A bulletin board system has many possibilities in distance education, and has been used successfully in at least a half dozen NHSC schools.

C

• **Computer-Based Training**—CBT, also sometimes referred to as computer-aided instruction (CAI) or computer-assisted learning (CAL), is a technique of presenting material to be learned by way of computer. A lesson module stored on a diskette is inserted into the computer. The computer presents the material to the student on the video screen and, in some cases, by accompanying audio. Computer-based instruction divides the material to be learned into small segments called frames. Many frames are sequenced to teach the subject. The frames may contain text, illustrations and even animated graphics.

The great benefit of CBT is that it is fully interactive. Students read the material, answer questions, work problems or otherwise interact with the computer. Such interaction reinforces the material learned.

Despite its effectiveness, few home study schools currently use this method of instruction because of its high cost and difficulty to develop. One exception is Heath Continuing Education Center in Benton Harbor, Michigan, which has complete home study courses on electronic fundamentals available in CBT form for personal computers.

• **CD**—The compact disc (CD) is a 120 mm diameter plastic disk containing audio recorded in digital form. Today, most new music is recorded and available primarily in CD format. While cassette tapes are still widely used, they are rapidly being replaced by CDs for music. And CD players are proliferating. Many individuals now have CD players on their home stereos, in their cars, and portable battery operated units.

CDs have two major benefits, high fidelity sound and random access, thanks to digital techniques. The greatest benefit of CDs for instruction is their random access capability. Individual segments of audio may be quickly and easily located at random and selected by a keyboard. With an audio tape, access is sequential and time consuming, and difficult. With a CD, the access is direct and instantaneous. This is a superior feature for instructional material. And CD mastering is now very affordable.

• **CD-ROM**—This is the acronym for Compact Disk-Read-Only Memory. It is an optical storage media for computers. The media looks exactly like an audio CD, but it is used to store binary computer data as well as digitized audio, video and graphics. The data CD-ROM is accessed by putting it into a special disc drive on a computer. Data is selected through menus and icons, then displayed on the computer's video monitor.

The big benefit of a CD-ROM is its incredible storage capacity, which is typically 680 MB (megabyte where mega means million and byte refers to one character). This is the equivalent of over ***300,000 printed pages.*** CD-ROMs are widely used for distributing large data bases and reference materials such as encyclopedias. It is also used for video, computer graphics, including graphics which use animation, and stereo audio. The CD-ROM is the key component in a personal computer-based multimedia system.

D

• **Digital Book**—The digital book is a small notebook-like, microcomputer-based device using a liquid crystal display (LCD) panel upon which text is presented. The text is stored on a miniature magnetic floppy disk or, in some cases, on a compact disc. An individual can quickly and easily sequence through the text on the display. The digital book is the publisher's latest attempt to test new methods of distributing print products. Sony and several other manufacturers produce these electronic devices but they are only now in the testing stages. Acceptance is not guaranteed as the big question now is whether individuals will buy books in diskette form and read them on an LCD screen. Should the technology be widely accepted, costs can be expected to drop dramatically. This might eventually be a alternative to the ubiquitous book or printed home study lesson.

E

• **E-Mail**—E-mail, or electronic mail, is another computer-based communications method which has become widely used over the past decade. Electronic mail is used primarily with computers that are networked together and large multi-user computers. A large computer known as the server in a network acts as the host and provides storage areas, known as "mailboxes," for all of the users on the system. The E-mail system then permits users on the system to send mail to one another. This is usually in the form of short notes, memos, and letters although longer documents may also be sent on larger systems.

Like the bulletin board system, E-mail provides a convenient way of communicating with computer users. It is generally more expensive than the simple bulletin board system but very flexible. And, like the bulletin board system, it can be used to provide a variety of student services and instructional opportunities.

• **Expert Systems**—An expert system is a special kind of artificial intelligence software used to store certain types of knowledge. Normally an expert system is created in a particular field of specialization known as a domain. The domain may be medical diagnosis, aircraft engine repair, or financial advising. A group of experts get together and pool their knowledge about a particular field and create what is known as a knowledge base. This knowledge base is stored in the computer in a unique format that allows it to be easily accessed. A program in the computer, called the inference engine, allows a user with a lack of knowledge in the field of expertise to tap the knowledge base and gain benefits from it. Generally this is done by asking the expert system questions. Alternately, the expert systems asks the user questions, then supplies appropriate answers in response. The inference engine searches the knowledge base for answers and provides them if available. While expert systems are used primarily for advising, they can also be used for education. More and more expert systems are being developed for the purpose of teaching specific subjects. In this regard, the expert system software could be considered as a special kind of computer-based instruction.

Expert systems may have several applications in home study schools. They may be used internally for advising students on various school policies and procedures. They can also be used for instruction. If the student has a computer, the school may use expert systems software to enhance the instruction in a particular area.

F

• **Facsimile**—Facsimile, or fax, is probably the high tech communications leader of the 90s so far. A fax machine is simply a way of communicating written and graphical images over the telephone lines. The fax machine scans a piece of paper containing the information which is then converted into electronic signals that are transmitted over telephone lines. A receiving fax machine decodes the message and regenerates the image which it then prints out on paper. Today, virtually every business and many individuals have a fax machine. It is THE way that companies and individuals communicate in the 90s

Many home study schools already use the fax machine. However, it is far more useful than most schools realize. Any technology that improves communications with the student is worthwhile. *If you are not already using this technology for your communications, it is one that you should consider adding immediately.*

G

• **Graphics**—Graphics is a broad and general term that has several meanings. It might indicate the photos and illustrations in a text or a particular style and layout of a printed page.

It may also refer to a high resolution color animated video display on a computer. It could mean the images used in a video program or message. Regardless of the specific definition, it has been conclusively proven that the use of graphics in any media greatly improves interest, attention span, and retention. It is also a well known fact that we tend to remember and understand things that we see better than those things that we hear or read.

For these reasons, graphics are extremely important in home study education. Anything that can be done to improve learning, communications and retention should be used. Graphics can be used to express many ideas in a compact form. Graphical presentations of information or material to be learned are not only more interesting but also more efficient as fewer pages and less time is required to communicate them.

Home study schools have used graphics for a century, of course. However, much greater use of it could greatly improve instruction. It takes a little more time and costs a little more money to produce graphic instructional material, but the benefits are realized over the long term.

H

• **Hypnosis**—Hypnosis is another mental technique that has shown benefits in improving instruction. When an individual is hypnotized, he or she goes into an extremely relaxed state. The subject is not really asleep although that is a common impression. On the other hand, hypnosis makes an individual's mind extremely alert and open to suggestion. The state of relaxation and alertness is ideal for education. Individuals who have been hypnotized generally learn faster and remember longer things that they are exposed to in the hypnotic state. Further, post-hypnotic suggestions can provide the motivation and incentive for individuals not only to study on a regular basis but also to improve their learning. Self-hypnosis is a technique which is readily taught and many audio and video low cost tapes are available to assist a person in achieving this condition on their own.

It is doubtful that hypnosis has ever been used in home study, save for the Hypnosis Motivation Institute, an NHSC member school in Tarzana, California. On the other hand, it is a technique which offers some promise for both the student and the school. It is an interesting area for research and testing for home study.

• **Hypertext**— Hypertext is a computer-based technique for storing and accessing information. In a hypertext application, frames or cards of information are created. Each one contains text and/or graphics that can be presented on a single computer screen. These are usually named and linked through the software. Frames or cards are created for many different aspects of a particular subject or field. The relationships between the frames are indicated. Then, when an individual wishes to access the knowledge and information in the hypertext system, he or she can simply browse or explore by using menus and the mouse or simply by entering key words. Related topics are designated in the frame so that an individual may continue his or her exploration of the subject, if needed.

Hypertext is generally easy to develop when limited to text and simple graphics. More elaborate hypertext systems can be developed using CD-ROMs which are capable of storing not only text but also more elaborate color graphics, active video and sound.

I

- **Interactive Video**—Interactive video is the process of using instructional sequences on video disk or tape to teach a specific subject. Normally, the information is divided into short segments of related instructional material that a student can work through on an interactive basis. A built-in microcomputer generates sequences, permits random access and branching, and provides feedback. Interactive video is programmed instruction video. It is highly effective but expensive to develop and dispense.

J

- **Job Aid**—This is a short, easy to use document, usually in print form, that gives a simple step-by-step procedure for doing a specific task or dealing with one type of problem. Job aids are normally used on the job, but also make great educational tools when supplemented by related training materials. They can also be implemented on the computer as an expert system. NHSC military schools—particularly the U.S. Marine Corps Institute—make good use of job aids in their courses.

K

- **Kits**—A kit is usually defined as any assembly of parts that you put together yourself to form a complete useful end product.

  The term kit has taken on a somewhat newer meaning over the years. Today it has a more generic definition meaning a group of related items that serve some useful purpose. It could mean a collection of supplies, an assembly of tools, or a mix of physical specimens and samples, or the like.

  Kits are ideal media to use with home study courses. They give the student experience with actual materials, components, tools, and products of the subject being studied. They provide the ever so important "hands-on" experience that is so necessary to develop in some fields. There is nothing particularly high tech about it, but kits are a media that is useful in improving instruction as well as increasing the desirability and marketability of the program.

L

- **Laser Disc**—A laser disc is simply another name for a compact disc used primarily for video. Laser discs are not a common consumer item as they are expensive and materials are rarely available. They are used primarily by schools, business and industry, the government and military for training purposes. The laser disc usually presents video information that is interactive with a built-in computer that provides interaction and feedback with the material. See also the sections on CD-ROM and interactive video for more information.

M

- **MPC**—Multimedia personal computer. A PC containing a CD-ROM and audio capability that is used in multimedia applications.

- **Multimedia**—Multimedia is a term used to describe the use of multiple media in presenting information or dispensing educational or training materials. It simply means that you use print, audio, video, computer, and other presentation techniques collectively in your course. You could say that the use of two or more different media constitutes multi-media.

  On the other hand, multimedia has taken

on a somewhat new definition over the past several years. In general, it has come to mean the use of several different types of medias in connection with a personal computer. The computer itself, of course, may be used to present information and training materials in the form of CBT. In addition, it may also form the basis for the control, operation and access of learning material on other media. For example, audio materials can now be easily created and stored on magnetic computer disks for presentation at the computer output. By installing an audio accessory board, your programs and computer training materials can be accompanied by voice, music and other kinds of audio. In these applications, one or more speakers become output peripherals for the computer.

Video can also be used along with a multimedia PC. A built-in video card permits video from a camcorder, a VCR, or a CD video disc player to be added to the display on the computer screen. The board converts the video into a format compatible with the computer screen. The information is then displayed on the full screen or in a small window along with other displays produced by the computer.

Another popular multimedia device is the CD-ROM. Massive amounts of information and educational material can be stored on a CD-ROM and easily accessed by the computer. Under a special program control, the information can be brought up as required by any instructional sequence. The information may be text, graphics, audio or video.

N

- **Neuro Linguistic Programming (NLP)** — This is a psychological technique that essentially helps a person change to fit some existing model of behavior or performance. The desired model is identified and studied and various methods are used to train a person to emulate the model thereby duplicating the desired behavior and performance. Like most other psychological methods, NLP is not widely used in education, but it has excellent potential especially in home study.

P

- **Programmed Instruction**—Programmed instruction (PI) is an old print technique that was originally developed back in the 1960s. It is not as widely used as it once was, but it is an extremely effective way of presenting some types of instructional materials in print form. One way to define PI is as a print version of computer-based training. (See CBT.) It's a little more difficult to develop than straight text, but it is extremely effective as it provides continuous testing, reinforcement and interaction. When considering new forms of print materials, improvements to existing material, or the addition of supplementary materials on special subjects, this is a good technique to consider. PI is being successfully used in some disc-based self-instruction programs, such as a course on real estate exam preparation offered by the Georgia Institute of Real Estate in Atlanta.

R

- **Radio**—Here's a technology that's been around for a little over a century. It is used primarily for entertainment and information. Yet, it is a near perfect method of transmitting instructional materials. Radio, of course, is nothing more than wireless audio. It is extremely low cost and it's as easy to prepare radio programs as it is any other audio instructional material. For this reason, it seems like more home study schools would explore the option of developing materials for use by radio transmission. It would permit the distribution of the audio material by wireless techniques rather than say cassette or CD-ROMs. The audio could be supplemented by workbooks, texts and other printed materials that would be sent by the school. This is an available and previously unexplored field for home study schools but has tremendous potential.

S

• **Satellite**—A satellite is certainly a high tech distribution system that is now already widely used for educational purposes. No home study schools use it, although satellite transmission of instructional material is one of the primary means of distributing distance education materials in colleges, universities, business and industry. The materials are normally in video form and can be transmitted directly by "filming" a classroom session or by transmitting prerecorded video materials. The information is fed to a satellite up-link which transmits the video to a satellite which serves as a repeater. The satellite then transmits the video back to earth stations whose antennas are oriented toward the satellite. Normally some type of distribution fee is required.

• **Simulation**—Simulation is the process of emulating or duplicating some physical device or social system. It is done by creating a smaller model of the real thing for the purpose of understanding it better. An example of a simulation is a game like Monopoly that imitates business and real estate. Computer games are mostly simulations of activities and worlds that cannot otherwise be realized or participated in. A computer game that simulates a modern urban city is SimCity which shows the interactions of the many different factors that affect any city.

Simulators are created for many different applications. Air craft simulators realistically duplicate flight under varying conditions to teach pilots how to fly in different situations. Nuclear power plant simulators teach operators how to deal with all kinds of problems. Simulators can demonstrate conditions that are too hazardous or too expensive to be experienced in any other way.

Today, most simulations are by computer. What you do is create a mathematical model of the device, system or situation and run it on a computer with appropriate graphics to add realism. Simulations are one of the best ways to learn as they teach by example and by forcing participation to gain realistic experience.

• **Software**—Programs that a computer uses to implement an application like education. Educational software is simply just another term for computer-based training (CBT) materials described earlier.

• **Subliminal**— A subliminal is some form of hidden or disguised signal or message that is generally only received and recognized by the subconscious mind. There are both visible and audible subliminal. Even smell has been used as a subliminal. An example of a visual subliminal is a single word or brief message that is flashed onto a movie or video screen for a period of 1/30th of a second. The visible eye and brain does not see or recognize it. However, the subconscious mind does pick it up and it does influence us.

Audible subliminals are verbal messages buried in other audio material such as music. They are almost below the threshold of human hearing. Yet, claims have been made that the subconscious can pick out these audible subliminals and react to them. While the subject of subliminals has been discussed for years, mostly in terms of advertising and promotion, it has only been within the last decade or so that any serious work has been done in the use of subliminals for educational purposes. It has also been discovered that while visible subliminals are extremely effective, there is some doubt as to the benefit, validity and veracity of audible subliminals.

A tremendous number of both audio and video subliminal materials have been created over the past several years. Most of these are used in self improvement tapes. If used on a regular basis, there are some positive gains to be made. Subliminals can be used to transmit important facts and information or simply to influence us to do things that we need to do or to stop things that we shouldn't do. While more study is needed, subliminals, particularly visual subliminals, can be an effective way to get some messages across and provide stimulation and motivation.

• **Superlearning**—Superlearning is simply another term used to describe the accelerated learning process defined above.

T

• **Telephone**—Old, but still high tech, the telephone is the premier communicating device in this country and its applications in home study are widespread.

By far the greatest use of the telephone, of course, is in communicating with students about tuition payments, exams and grades, and in communicating with the instructors about materials they are learning. Direct one-on-one voice communications with students is extremely effective. It is faster and easier than written communications. It is also far more motivational and better matched to the short attention span of most students today. Telephone communications can speed up instruction and prevent the loss of interest that so naturally accompanies most home study programs. All home study schools should have 800 numbers and Wats lines to increase telephone communications with students. More home study schools should incorporate more regular verbal telephone communications with students for the purpose of improving instruction and increasing motivation.

The telephone has many other uses as well. The fax machine mentioned earlier is an example. The telephone system can also be used for computer communications. Bulletin boards and E-mail described earlier are examples. Instructional materials can be exchanged on-line directly by modem or through the BBS and E-mail systems, if available.

Another totally overlooked opportunity is the 900 number which might permit you to provide extra services and additional instruction where the telephone company bills the student. The possibilities are interesting!

• **Television**—Television is also another term for video. See also the definition of video given later. For our purposes here, we define television as the presentation of video information by wireless transmission or by cable. Video is generally defined as material that has been recorded on tape or diskette for distribution and later presentation. Few, if any, home study schools actually use television. Some schools advertise on television but that's about as far as it goes. The transmission of instructional materials is simply too difficult and expensive to implement. Yet with the availability of low cost cable television and the near 80% penetration of cable TV into U.S. homes, this makes television a far better media than you might expect. The problem is in developing materials that can be presented in this way and this is usually expensive. It seems strange that no home study school has investigated cable television as a major transmission medium for their programs.

V

• **Video**—Video is instructional material prerecorded on cassette tapes or video discs. There is probably no better instructional medium than video for almost any subject. And almost everyone now has a VCR. It is a near perfect media for home study. A full course would be expensive to develop, but the entire program does not have to be in video format. And it is highly desirable to teach some subjects by this technique that cannot adequately be taught by text. By making short inexpensive videos, these make excellent enhancements to any program.

Another way around the cost is simply to use existing video materials. There are literally thousands of video tapes available that can be used for instructional purposes. When properly sequenced and integrated with a student workbook, a powerful low cost video instructional program can be easily created.

For schools who can afford it, developing video instructional materials from scratch is a great way to implement the course. Learning will be faster and more thorough than any other method. Most students were brought up in the TV generation and video is their preferred way of receiving information, news, entertainment, and even education. By using this method you can greatly improve instruction as well as retention and graduation rate.

• **Virtual Reality**—Virtual reality is an experimental technique that makes use of computer simulation to create false and artificial worlds. Normally, the user puts on a special pair of goggles which contain small color video screens which receive information from the computer. Then by the use of graphics and animation techniques, the computer produces visual images which can simulate virtually any kind of environment, such as a room or the cockpit of a spaceship. Virtual reality may also incorporate other peripheral devices such as a sensor glove that when placed on the hand can be moved around to produce motion that is visible on the goggles screen. Another method is to use an aircraft simulator-like device to produce motion and other effects to improve realism. Virtual reality is a developing technology and essentially not ready for prime time, as they say. Yet for certain types of instruction, it may eventually be useful. Again, this is one of the technologies to follow.

• **Voice Mail**—Voice mail is a modern electronic application of the telephone system. Voice mail is nothing more than a sophisticated telephone answering machine system. Many companies and government agencies use voice mail to answer the telephone and direct the caller to a specific person. If that person is unavailable, you may leave a voice mail message. Like any answering machine, the voice mail simply records your voice on a computer disk which can be played back later. Voice mail systems have many applications as they can be used to supply instructional or informational messages to students who call. Access to the various messages is obtained by the use of Touch Tone codes, making many messages possible.

Top 10 Reasons Why Home Study Schools Don't Use More High Tech Instructional Media

A not-so-tongue-in-cheek take-off on David Letterman's *Late Nite TV Show* feature.

10. What's in it for me?
9. My subject doesn't fit the media.
8. The student will have to buy special hardware.
7. It doesn't really improve learning, does it?
6. The students could care less.
5. I don't have the in-house people or expertise to do it.
4. It's too expensive and it will make the courses cost more.
3. It's too much trouble.
2. We've always done it this (the old) way.

. . . and the number one reason is . . .

1. I hate to change!

10 Reasons Why You Should Use More High Tech Instructional Methods in Home Study

1. Students will learn more sooner.
2. Students will remember longer.
3. Students will understand better.
4. Students will be less bored, more interested. Edutainment.
5. Students will be more highly motivated.
6. Prospects will be more attracted to and enticed to enroll with your school thereby increasing sales.
7. Knowledgeable and competent graduates will reflect positively on the school and distance education in general.
8. Completion rates will be higher.
9. Student contacts with instructors should decrease.
10. Tuition realization and profits should increase.

A Special Word About Print

The "High Tech" of Home Study Media

Most home study courses are in print format, textbooks, lessons, study guides, etc. Print materials are cheap and relatively easy to develop, store and distribute. Print materials are portable and completely random access. If indexed and adequately outlined, they make good reference materials. And best of all, everyone can read. Well, almost everyone.

The downside on print materials is that many students are not good readers. Some read poorly and others just learn better by visual or audible means. In many cases, those students who turn to home study later in life because they did not go to college tend to be those who were not good at academics which usually translates to poor reading ability.

Print is still the best media for home study because it offers so many advantages. However, that should not exclude other media which can enhance and supplement print materials. Audio, video, CBT and other media and high tech methods should be employed because they do indeed improve instruction, motivation, and completion rate.

When creating new materials or making revisions, the high tech methods of print should be considered. Most schools stay with standard textbook formats. But there are so many other techniques that can improve print materials, such as the customized-published textbook approach just hitting the market. Publishers are permitting home study schools to "custom design" a course from a hardbound commercial textbook. Some of the other print-enhancing techniques include:

1. More color and graphics. See "graphics" in glossary.
2. Programmed instruction. See glossary.
3. Information mapping. Information mapping is a technique used to create more efficient printed materials that are easier to use. The chosen topic is researched, analyzed, and organized, then presented in a logical but highly condensed manner. Special formatting and use of graphics make the resulting material faster and easier to consume or use.
4. Job aids. See glossary.
5. Comic book format. Very popular in Japan and highly effective for many topics. Gemological Institute of America, Santa Monica, California, has used this technique in its "Fine Jewelry Sales" course.
6. Greater use of outlines, bulletized summaries, and one-liners.
7. Greater use of sidebars for presenting related material but out of the mainstream of the lesson. Look at any issue of the national daily newspaper, *USA Today,* for ideas.

NHSC News readers may contact Lou Frenzel by calling 305-341-0727.

Chapter Four

Supervising Course Authors

by
Mary E. McKeown
Executive Vice President and
Educational Director
American School

The Author

Mary joined the American School, Chicago, Illinois, in 1942 as an instructor. In 1958 she was named High School Principal, and today she serves as Executive Vice President and Educational Director. Mary has conducted in-service training programs, written study guides for mathematics courses, and developed new curriculum materials for the American School.

Mary served on the committee to review the "Policies and Standards for Optional Schools and Special Function Schools" for the North Central Association. She served as Chairman of the NHSC Research and Educational Standards Committee from 1988 to 1993.

Introduction

The selection of an author for a home study course is one of the most important decisions that an Educational Director makes. It is not an easy task. It is a task that requires great care. Well-written courses can make the difference between success and failure for a school.

What Do You Look For?

What characteristics and abilities do you look for in selecting a writer? First, look for someone with expertise in the subject matter, a person with up to date knowledge of the field. Second, you want someone who can write in the "home study manner," who can transmit information to students. You want writers who write for their readers rather than their peers. Third, seek writers who have a broad understanding of the field of home study and the special needs of home study students. Fourth, look for those who can organize written material so as to lead students step-by-step through the course. Finally, you want writers who have the ability to complete the manuscript **on time!**

How do you select a writer who has all the qualities outlined above? Home study schools that have a large staff of department heads and instructors have a ready pool of talent. The Educational Directors of such schools are particularly fortunate in that they are aware of the potential writer's educational background, writing skills and organizational ability. A writer selected from the staff can be expected to know the format the school uses, to be aware of capabilities of the students, and to be already familiar with the principles of teaching by correspondence.

However, even in a large school, there are times when it may be advisable to go outside the organization to get a suitable author. No one on the current staff may be qualified, or the persons who are qualified may be busy on other projects. Therefore, to meet time constraints, the Educational Director will have to go outside the organization. The selection of an "inside or outside" author depends upon the circumstances (time, budget, staff competence, etc.).

Where Do You Find Authors?

Where do you get good writers outside of your organization? You have many sources. If the course you are planning is an academic one, for example, United States History for a high school program, you can contact the history department of colleges, universities or high schools in your area for possible authors. (It is usually easier, less costly, and less time consuming to engage people who live close by—especially if you are working with more than one author.) However, since the Educational Director is experienced in home study methodology, he or she should not be afraid to work with an aspiring author in any part of the country if that author proves to have the qualifications desired. If an author is particularly outstanding (and the fee reasonable), it is worth the extra effort to work with an author located at some distance from the school. Today's technology makes it relatively easy to communicate through fax and computers.

If the course is vocational, you can contact the appropriate departments of vocational schools at secondary and postsecondary levels. Industry, too, is a good source for writers. Those currently employed in industry have practical experience and know the latest developments in their fields. You can advertise in trade and technical journals. Keep your eyes open. If you come across an article in a technical journal that is written in a style that will be understood by your students, contact the author. Perhaps you can hire him or her to write a course for you if he or she is qualified.

Multiple Authorship

For some courses it may be advantageous to have more than one author. This might be true in a course such as World History. Having several writers, each of whom is a specialist in the history of a particular area, would add to the scholarship of the course. The same would be true in other fields such as a course in law or taxation. Having more than one author can also speed up the writing. Some people work better in teams and are spurred on by discussing the project with others. On the other hand, there can be disadvantages in that writing styles and lesson tone may differ widely. This difficulty can be overcome by making one of the authors responsible for reconciling the variance in styles and by having an experienced editor review the material. Every home study course needs to be read and edited by a "central mind" to assure uniform tone, style and flow of material. Some writing teams divide work so that one writes the lesson material and the other writes the self-check and examination questions. The division of labor should be the one that will produce the best course.

Establishing a Working Relationship

Once you have selected an author you will need to have an orientation session. The author needs to know about the prospective students. Who are they? High school dropouts? High school graduates? College graduates? Men? Women? Both? What age group? Income? What are their reasons for taking the course? The more the author understands the intended audience, the better he or she will be able to write a course that will suit that audience.

Discuss course content. Set up a list of behavioral objectives for the course. Be sure to let the author know what the extent of the course is to be. For example, first year Algebra would be beginning Algebra through the solution of quadratic equations. A course in repair of small electric motors would be limited to small electric motors, and it would not include gasoline motors. You do not want to have the course duplicate material in other courses you may already offer.

Every home study school should have a manual for course writers. Several major NHSC member schools have for years made their manuals available to other schools. This *Home Study Course Development Handbook* is a "must read" for any course developer/writer.

The manual should give the writer an idea of what is expected. It should outline the format to be used, the length of learning units, types of questions to be used in examinations, etc. It should emphasize the differences between classroom and home study teaching. For example, it should stress the fact that the only educational materials the home study student can be expected to have are those sent with the course. Home study courses must be self-contained. The writer has to anticipate the learning problems. There will be no teacher there to explain convoluted prose in the course, to reassure the discouraged student, or to supply material that has been outlined.

Once you have decided upon an author and outlined the course objectives, you need to set the ground rules. Make sure that each of you knows who is responsible for what. Have a contract for any author, whether it is done by a salaried employee or on the outside. It should specify who is responsible for supplying pictures, charts, and other illustrations; how and when the manuscript is to be submitted; how and when the author is to be paid; under what conditions the contract can be canceled; and, most importantly, a timetable of due dates (see appendices A and B).

The amount and basis for payment will, of course, depend upon the school. It may differ for various courses within a school depending upon the difficulty of getting qualified authors. One Educational Director recently said that his school paid by the finished page. A public institution paid $5,800 per lesson for a college course it developed. Others pay lump sum of anywhere from $1,500 to $20,000+ per manuscript. In short, the budget of the school, the difficulty of the course, and the credentials of the author influence the amount of remuneration.

Supervising Authors

Now that you have the author primed to write, you need to keep his or her enthusiasm peaked. Drop a note or call them from time to time. Set up a "tickler file" to remind yourself of when to call the author. Keep in touch with him or her. Today's technology, such as computer networking and faxing, makes it easy to communicate with distant authors and allows you to get immediate feedback. Maybe you will find a clipping from a newspaper or magazine which relates to his/her project. Send it to him or her.

As soon as you get the first portion of the manuscript, read it and contact the author. Feedback is as important to authors at this point as it is to students who have just submitted their first examinations to the school. You want to keep authors enthusiastic about the project. Get your evaluation to them quickly. Emphasize the strengths of their presentations. Then make suggestions for improving sections you feel are weak. Be gentle but firm. Be as tactful as you can. Some people feel that any criticism of their writing is criticism of them personally. However, keep in mind that you must have a product that meets the needs of the students and your school, and you are the person who knows these needs best.

As you look over the first lesson, ask yourself these questions:

1. Is it written at a level the student can understand?
2. Is it condescending? Or, on the other hand, is it stilted and heavy with jargon?
3. Is its development logical? Does it proceed from the simple to the complex?
4. Does it hold your interest? If it doesn't hold yours, it won't hold the student's.
5. Does it give the student practical examples that he/she can understand, rather than just theory?

If the reading level is too high, do not just tell the writer that the reading level is too high. Have your editors rewrite a sentence or a paragraph here and there at the level you think appropriate so the author can get an idea of the type of changes needed. In technical subjects it may be necessary to tell the author to define any technical terms he/she uses. If the author tends to be condescending, point it out to him/her (in a non-condescending way, of course). If, however, the author tends to be intellectually overbearing, point that out to him/her too.

The author who has not had the experience in correspondence education may not realize the need for logical, sequential steps in his/her presentation. Show him/her where such omissions occur. Indicate where practical examples can be given if he/she has overlooked them. Suggest ways the author can spark students' interest in his/her language and by relating his/her presentation to the real world.

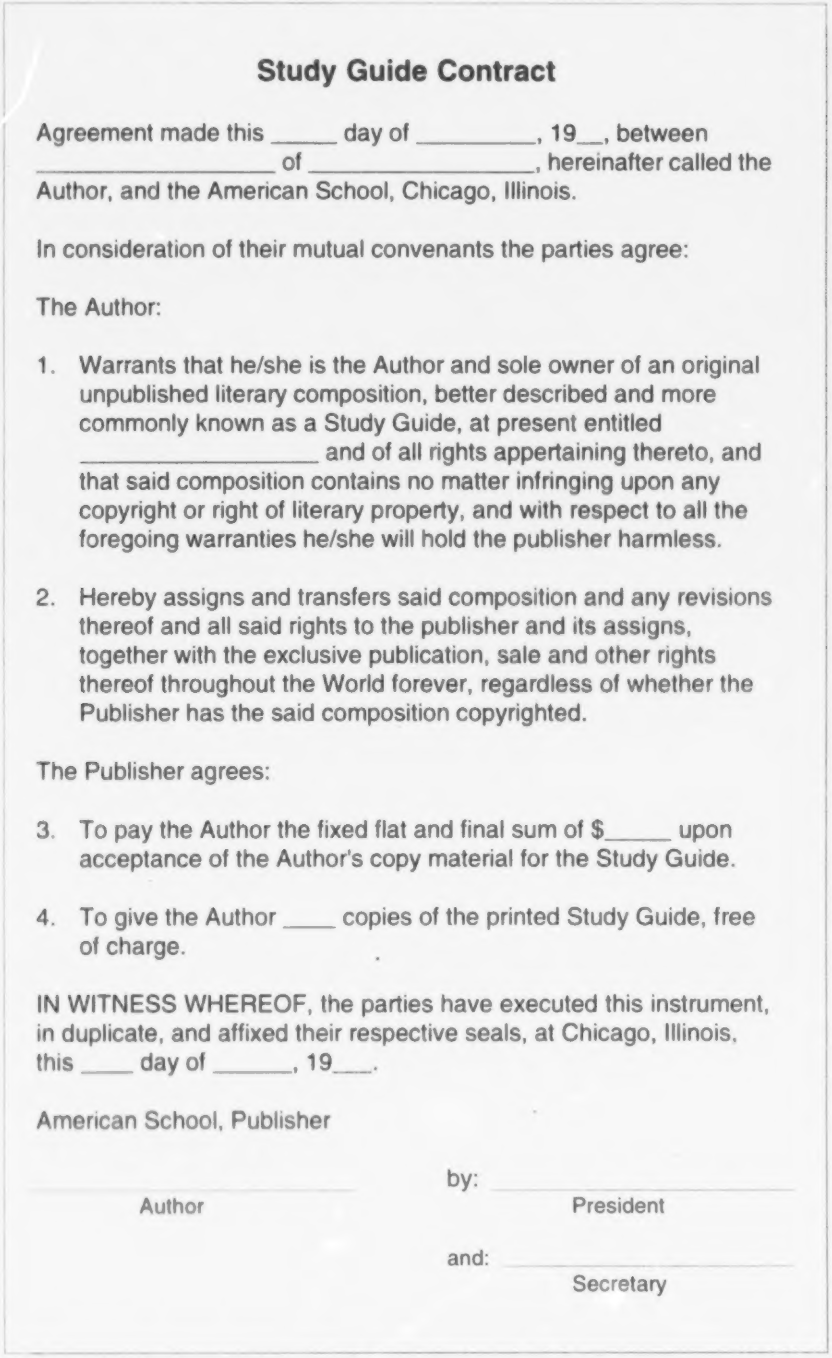
Conclusion

Educational Directors do not have an easy job. They are often caught between other school executives who expect a course to be ready for marketing as soon as the idea for it is conceived and procrastinating authors. You will have to follow up with the author to be sure he/she is meeting the time schedule you have set.

It is important to keep in close touch with the writer, meeting or speaking with him/her from time to time. Authors will differ in their work habits. What motivates one author may irritate another author. Most will stick close to the original schedule. Others will start out with enthusiasm and then reach a plateau. A note or a telephone call will usually get these folks back on the track. However, there are always the procrastinators. They usually say that they work better under pressure. Keep after them. Most of us do not like to nag, but unfortunately, nagging is often the only pressure to which certain people respond. In short, the secret of success in re-motivating delinquent authors is to practice the art of making them feel guilty.

Thus, at times you will have to be a teacher, advisor, psychologist and even an ogre, but your goal—an excellent home study course—is well worth the effort.

Appendix A



Study Guide Contract

Agreement made this _____ day of _________, 19__, between __________________ of _________________, hereinafter called the Author, and the American School, Chicago, Illinois.

In consideration of their mutual convenants the parties agree:

The Author:

1. Warrants that he/she is the Author and sole owner of an original unpublished literary composition, better described and more commonly known as a Study Guide, at present entitled __________________ and of all rights appertaining thereto, and that said composition contains no matter infringing upon any copyright or right of literary property, and with respect to all the foregoing warranties he/she will hold the publisher harmless.
2. Hereby assigns and transfers said composition and any revisions thereof and all said rights to the publisher and its assigns, together with the exclusive publication, sale and other rights thereof throughout the World forever, regardless of whether the Publisher has the said composition copyrighted.

The Publisher agrees:

3. To pay the Author the fixed flat and final sum of $_____ upon acceptance of the Author's copy material for the Study Guide.
4. To give the Author ____ copies of the printed Study Guide, free of charge.

IN WITNESS WHEREOF, the parties have executed this instrument, in duplicate, and affixed their respective seals, at Chicago, Illinois, this ____ day of ______, 19___.

American School, Publisher

Author

by: President

and: Secretary

Appendix B

Here is a sample of a checklist authors use to ensure the complete submission of materials (courtesy of the U.S. Air Force Extension Course Institute).

Checklist

Date: ________________

____ Outline (original and copy)

____ Front Matter (original and copy)
    ____ Manuscript Title Page
    ____ Inside Cover Page
    ____ Preface
    ____ Acknowledgment Page
    ____ Table of Contents

For BOF: ____ Plan of Instruction
____ Annotated STS

____ Text (original & copy)
    ____ No. of Chapters

____ Reference Matter
    ____ Bibliography
    ____ Glossary
    ____ Appendix
    ____ Supplementary Material

____ Copyright Release (for quotations & other borrowed material)
____ "For Official Use Only"
    ____ Yes
    ____ No

____ Chapter Review Exercises (CRE) Items/Answers (orig. and copy)

____ Volume Review Exercise (VRE) Item Pool (orig. and copy)
    ____ VRE Item Plan
    ____ Title Page
    ____ Items
    ____ MAG Cards

____ Illustrations (2 sets; one may be "faxed.")
____ No. of Figures
____ No. of Foldouts
____ No. of Charts
____ No. of Tables
____ Coy of Legends: Figs. ____, FOs ____, Charts ____, Tables _____

____ Total for Text

____ Total for BOE Answers, CREs, and VREs

____ Have all forms, TOs, Manuals, REGs, Pamphlets, etc, been checked for currency?

Course Author: ____________________

Supervisor: ____________________

Chapter Five

Preparing Instructional Objectives

by
Marianne Evans Mount
Executive Director
The Catholic Home Study Institute

The Author

Marianne received her Masters in English/Education from Columbia University in New York City and her Masters in Religious Education from the Pontifical University of Rome, Italy. Since 1984, Marianne has served as the Executive Director of The Catholic Home Study Institute in Leesburg, Virginia.

In this chapter she explains why instructional objectives—or learning goals—are just about the most important element there is in preparing an effective home study course. Often ignored or misunderstood, learning goals are blueprints for excellence.

Introduction

The term "instructional objective" may sound overly technical to those of us who come from a background of traditional classroom instruction. However, once we understand why objectives are vital to good home study materials and learn the simple techniques for developing them, we will have mastered the information in this chapter and be well on our way to becoming experts in this area of course development.

The "What" and "Why"

Robert Mager in his classic book entitled *Preparing Instructional Objectives* uses a fable to illustrate the importance of instructional objectives:

> *There once was a seahorse who went off to seek his fortune. He encountered an eel and a sponge who each sold him a flipper and a scooter for moving faster in the water. Feeling good about his new technology, the seahorse then met up with a shark who offered to give him something, too—a short cut through his mouth!*[1]

The moral of the fable is, "If you're not sure where you're going, you're liable to end up someplace else." The same lesson holds true when we develop course materials without using objectives.

Instructional objectives are statements that we provide for our students at the beginning of a lesson or course that tell them "up front" what they should be able to do as a result of completing the course or lesson materials. Objectives describe results and are similar to a road map that indicates where, when and how we are to arrive at our destination.

Instructional objectives might also be compared to an architect's blueprint. Until the contractor has the blueprint, he or she cannot determine the materials needed, the various stages of construction, the date of completion and the equipment and subcontractors required to finish the job. The blueprint tells the contractor what the final result should be and enables him/her to plan the entire project. Course objectives serve the same purpose for you as the course designer and for your students taking the course.

Mager makes the following point about the need for objectives: "Instructors make contracts with their students . . . those who don't clearly specify their instructional objectives, who don't describe to the best of their ability what they intend the learner to be able to do after their instruction, are certainly taking unfair advantage of their students."

Good instructional objectives are especially critical for home study learners. The typical home study student sitting at the kitchen table must have a clear idea what is expected of him. He or she has no way of compensating for any vagueness or confusion, and must rely only on the printed materials provided him or her. As Gordon C. Bennett, a retired educational expert for the U.S. Army stated, "The correspondence course writer therefore must become an unquestioned expert at writing objectives."[2]

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[1] Mager, Robert F.: *Preparing Instructional Objectives,* Second Edition. California, Pitman Management and Training, 1975.

[2] Bennett, Gordon C. (ed.): *Developing Training Objectives and Question Construction and Test Preparation.* Washington, D.C., NHSC, 1974.

Learn by Doing

In order to illustrate the value of using instructional objectives, the material in this chapter will be presented using a home study format that begins with instructional objectives. You will be cast in the role of a home study student and learn firsthand the method you will be using. (No doubt when you finish this lesson on objectives, you will want to make improvements to my objectives!)

At the end of this lesson on preparing instructional objectives you will be able to do the following things:

- Write a one-sentence definition of an instructional objective;
- State in three sentences or fewer why home study lessons must use instructional objectives;
- Given three sample objectives, label correctly the performance, the conditions and the criterion of acceptable performance when any or all those characteristics are present;
- Using Appendix A, Job and Task Analysis, list in order three steps in the development of objectives;
- Identify from a sample of five instructional objectives, which ones are measurable (good) and which ones are not measurable (poor), with an accuracy of 80% or higher;
- Given twenty verbs, label each one as either good (G) or poor (P) for use in writing instructional objectives, with an accuracy of 90% or higher;
- List two reasons for sequencing instructional objectives;
- Explain the recommended sequence for preparing home study materials and give one reason for this sequence; and
- Score 80% or higher in ten minutes or less on the self-check test at the end of this chapter.

The Three Parts of a Good Instructional Objective

The purpose of instruction is to **change behavior.** As teachers we measure learning by asking our students to do something that indicates not only that learning has taken place but the degree of learning based on standards we have established under certain specified conditions.

We usually do this by giving an examination or by asking for certain skills to be performed, such as taking a road test for a driver's license or preparing a meal if we are teaching home economics. In other words, mastery of knowledge can only be measured by observing performance or behavior. Therefore, good objectives must be stated in words that describe behavior and require some form of action.

The best objectives are those that clearly state the results you wish to obtain. In order to be clear you need to be specific and use words that describe action. You are measuring performance, not describing a mental attitude such as "appreciation" or "understanding."

The clearer your objectives are stated, the easier you can measure success. This is especially true for your home study student who is seated at the kitchen table with only the printed page, while the instructor or course designer are possibly hundreds of miles away.

Be Specific

There are three parts to a good objective: (1) the performance, or what you expect the learner to be able to do; (2) the conditions (if any) under which you expect the learning to take place; and (3) the criterion or standard of performance, indicated either in terms of time or accuracy.

A good objective does not have to contain all three parts; however, the more specific you can be, the easier you will make it for the learner to accomplish the goal.

1. Performance

Let's look at an example of what we mean by performance. Remember we just said that performance describes a behavior that can be measured. What about the following objective—"The learner will understand how to use paragraphs in learning to write an essay." How do we know that the learner "understands" how to use paragraphs? Does this objective state a performance? Is it measurable?

The verb "understand" does not describe actions and cannot be observed. Why not rephrase this objective by describing a behavior that will indicate that the learner does "understand" how to use paragraphs to write essays.

For example, how about this, "Given a topic familiar to the learner, the learner will write three paragraphs on the topic. Each paragraph will contain a minimum of three sentences and include a topic sentence and a concluding sentence. The paragraphs will be written in a logical sequence." Now the learner is asked to do something that can be measured and which indicates that the learner truly "understands" how to use paragraphs.

2. Conditions

An objective does not necessarily have to describe more than the performance. However, there are times when an objective will be vague if conditions are not specified. For example, an objective could read, "The learner will be able to quote three passages from the New Testament that support the Church's doctrine on infallibility." Will the learner be able to use a Bible as a reference or must it be done from memory? Conditions describe all the aiding and limiting factors by which the task must be performed. Conditions also include special equipment, charts, resources, supplies, facilities and environmental factors, such as weather or temperature. (For example, "The Boy Scout will list all the equipment needed to complete a ten mile hike **in the rain, in mountainous terrain**." The highlighted words describe the "conditions" of the objective. You can see that without including conditions this objective would be too vague.

3. Criterion

The criterion tells the learner how well he/she is expected to perform the task. The performance is measured against an outside standard if, for example, we are talking about taking the bar exam to practice law in Virginia. On the other hand, the criterion could be a range of successful answers (four out of five or a percentage of correct answers that the teacher has determined to be acceptable). Criteria can be expressed in terms of time limits or accuracy. For example, an objective could be to parallel park a car. That objective could be accomplished by a good driver in fewer than five minutes or by a poor driver in thirty minutes. Without specifying the criterion, the objective does not identify the good driver from the poor driver.

How are Objectives Developed?

Where and how do we start in the process of developing good objectives?

If we are writing course materials to train someone to do a job, then we must start with the job itself and analyze the skills or tasks required to do the job (see Appendix A). Then we develop objectives from the "task analysis" to make sure that the course will actually teach students the skills necessary to do the job. Appendix A lists the various steps for performing this analysis. Appendix B is an exercise for you do to.

If we are teaching an academic subject such as Remedial English, then we begin by asking ourselves what skills the students must learn in order to be competent in Remedial English. The skills are listed, grouped and sequenced. Then we are ready to develop objectives from the list of skills.

Self-Test

It is time to test your skill at identifying good objectives from poor ones. Remember that good objectives describe results that can be observed and measured.

Read the following five objectives and write P (poor) or G (good) next to each one. Then we will discuss the correct answers.

______ 1. Employees will not take more than 15 minutes to clean their equipment each day.

______ 2. Employees will recognize the value of being punctual.

______ 3. Employees should be loyal.

______ 4. Seams will be sewn using thread #10753 on all cloth of 14 ounces or more.

______ 5. The learner will be able to answer seven out of ten questions correctly in the chapter review at the end of the lesson.

You are an expert if you had the following answers:

1. Good. It describes an observable, measurable behavior.
2. Poor. You cannot measure "recognizing values." Better to have said, "Employees will arrive at 7:45 AM every work day." That is one way to measure punctuality.

3. Poor. How do you measure "loyalty"? Better to say for example, "Employees will not be permitted to discuss confidential information about the company to other employees or to those outside the company unless directed to do so by their supervisor." That behavior is an indication of loyalty to the company.

4. Good. It is clear and to the point.

5. Good. It is observable and measurable.

How did you do? Remember, the key to a good instructional objective is to focus on what you can see the learner do. The performance should be specific, measurable and observable.

Use Action Verbs

To assure that you are describing a task or behavior that can be measured, use action verbs. Ask yourself what it is you are asking the learner **to do**. If your objective does not require action, then you need to rewrite your objective. Here is a list of good action verbs to use as well as some "slippery" verbs (Mager's term) to avoid:

Good Action Verbs:

drill
explain
develop
paint
label
state
record
devise
summarize
dictate
describe
type

"Slippery Verbs:" (avoid)

know
believe
enjoy
realize
have
appreciate
understand
grasp
feel
sense

Remember to choose verbs that do not leave any room for interpretation by your students. As Mager points out, "When we are interested in abstract states such as knowledge or attitudes, we can only know whether we have succeeded by observing students doing something that represents the meaning of those abstractions."

Sequencing Objectives

Sequencing objectives means that you arrange your objectives in a logical sequence. There are several ways to arrange the sequence.

For example, you could arrange a sequence of objectives according to the level of difficulty of the subject matter, beginning with the simplest concepts and gradually introducing more difficult concepts. In a unit on punctuation you would begin with periods and commas and later introduce semicolons and colons.

You could sequence objectives according to logical steps. In a course on cooking you would list objectives on using liquid and dry measurements before listing an objective that requires the making of a chocolate souffle.

If your course materials are designed to teach a job skill, you would want to sequence the objectives in the order that best prepares the students to perform the job successfully in the real world.

If you are teaching a method of doing something such as operating a processing program on a personal computer, then the objectives should be sequenced in the order that the learner should follow when operating the computer.

The Sequence of Good Course Development

Unless you have been associated with home study course development in the military, you may not be familiar with an approach to course development called Instructional Systems Design (ISD). Good instructional objectives are part of this method, but the entire sequence of course development may seem to be turned around in comparison to traditional course writing methods:

Once you have written your objectives, the next step in course development is . . . not the text (!) but the examination. The examination should test the objectives and be based on them. The exam should also reflect the weight or importance of each of the objectives and their sequence.

After the exam is written, then the text is written. Using this sequence, you are assured that the text material will contain the information stated in the objectives and not extraneous material that may confuse the students. Since you have already developed the exam, you know what material must be included in the text. Text writing will flow more easily because the objectives will serve as the blueprint.

As supervisors of course development, it is clear how important good objectives are. It is essential to evaluate the objectives before any additional work is undertaken by course authors. The objectives become the standards of measurement in evaluating the exam and the written text. This switch in the sequence of course development will enable you to keep tight control over course content and produce materials that accomplish the stated objective.

Conclusion

If you have accomplished the objectives stated at the beginning of this chapter, congratulations! You are no doubt convinced of the importance of providing well-written instructional objectives whenever you produce course materials. Perhaps this chapter offered a review of skills previously learned or gave you some tips for overseeing certain areas in your course development department.

I would like to leave you with a list of eight questions developed by Gordon Bennett[3] that you may wish to answer yourself or share with your staff who are involved in developing instructional objectives. Good luck!

YES	NO	
☐	☐	1. Have I stated precisely what the student will be able to do as a result of successful completion of the course?
☐	☐	2. Have I stated the standard to which the student must be able to carry out the desired performance?
☐	☐	3. Is it possible to measure exactly that the student can perform to the standard required?
☐	☐	4. Have I indicated what the student will be allowed to use and not use in demonstrating attainment of the objectives?
☐	☐	5. Are the objectives stated in clear, concise, specific, and measurable terms?
☐	☐	6. Have I properly grouped and ordered the objectives?
☐	☐	7. Have I tested the objectives to make certain that they accurately and completely communicate to the student the learning to be achieved?
☐	☐	8. Have I provided in the course package all the resources needed by the student to assist in attaining the objectives?

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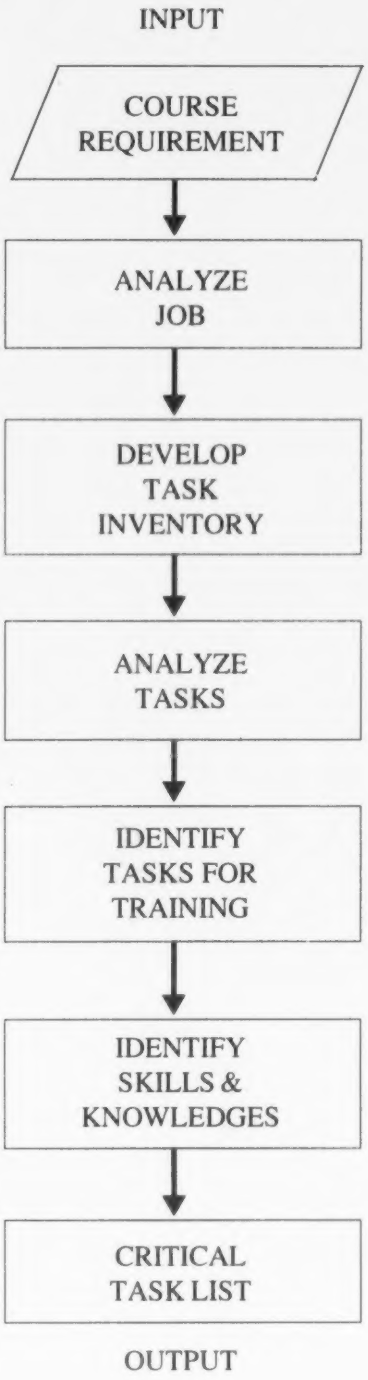
[3] Bennett, Gordon C.: *Developing Training Objectives and Structuring Lesson and Examination Exercises,* Fort Lee, VA, U.S. Army Quartermaster School, 1974.

Appendix A

Job and Task Analysis


INPUT
COURSE REQUIREMENT
ANALYZE JOB
DEVELOP TASK INVENTORY
ANALYZE TASKS
IDENTIFY TASKS FOR TRAINING
IDENTIFY SKILLS & KNOWLEDGES
CRITICAL TASK LIST
OUTPUT

Appendix B

Self-Check Test

Directions: Choose the correct answer for each of the following ten multiple choice questions. Refer to the following five sample objectives to answer the test questions. Good luck. Use the answer key to check your results.

Sample Objectives

1. Given a list of 35 vocabulary words, the student will be able to identify the definitions of at least 30 without using a dictionary.

2. Given all the required tools, the student will be able to change a tire on a car in twenty minutes or less.

3. Given the document *Mysterium Fidei* to read, the student will grasp the significance of the term, "transubstantiation."

4. Given all the ingredients, equipment and recipe, the student will be able to make a chocolate souffle.

5. The student will be able to play "Jingle Bells" on the piano.

Questions

1. In objective #1, which item below states the conditions?
   a) identify the definitions
   b) without using a dictionary
   c) 30 out of 35

2. In objective #4, which item below states the criterion?
   a) no criterion stated
   b) given all the ingredients
   c) make a chocolate souffle

3. In objective #3, which term is "slippery"?
   a) significance
   b) term
   c) grasp

4. Using objective #5, which item below identifies the performance?
   - a) on the piano
   - b) play "Jingle Bells" on the piano
   - c) neither of the above

5. Referring to all the objectives, which one below is **not** measurable and observable?
   - a) 3
   - b) 5
   - c) 2

6. Which item below is not a reason for sequencing objectives?
   - a) presents skills developmentally
   - b) teaches a method
   - c) lowers reading level

7. Which verb below is **not** appropriate for use in writing an instructional objective?
   - a) list
   - b) illustrate
   - c) appreciate

8. Identify below recommended ISD sequence for course development.
   - a) objectives, examination, text material
   - b) objectives, text material, examination
   - c) examination, objectives, text material

9. Identify below the correct sequence for doing a job and task analysis.
   - a) analyze tasks, develop task inventory, identify skills and knowledge
   - b) analyze job, analyze tasks, identify skills and knowledge
   - c) identify skills and knowledge, analyze tasks, analyze job

10. Which statement below does **not** describe an instructional objective accurately?
    - a) A meaningfully stated objective succeeds in communicating your intent
    - b) An objective always says what a learner is expected to be able to do
    - c) An objective must consist of a single sentence

Answer Key:

1. B 2. A 3. C 4. B 5. A
6. C 7. C 8. A 9. B 10. C

Chapter Six

Total Quality Manuscripts

by
Dr. Charles B. Marshall
Vice President and Dean
and
David R. Buddle
Editor
The Hadley School for the Blind

The Authors

Dr. Charles B. Marshall is Vice President and Dean of The Hadley School for the Blind in Winnetka, Illinois. Before that, Dr. Marshall was the Vice President of La Salle Extension University. He is also a former member of the Accrediting Commission of the National Home Study Council and a frequent Chairman of Accrediting Commission Examining Committees. He has been in the home study field for over 25 years.

David R. Buddle is editor at The Hadley School for the Blind. He has nearly 10 years' publishing experience, including proofreading, copyediting, typesetting, and design.

Introduction

The key to turning rough copy prepared by authors into workable home study material lies mainly in defining the elements of first-rate correspondence study offerings.

Over the years we have devised a formula that may be helpful to our colleagues in the home study field. While W. Edward Deming's 14 basic principles of Total Quality Management may not all apply to an educational institution, most do apply, especially in identifying the student as the ultimate "customer." With that in mind, we respectfully suggest the following methods to create total quality manuscripts.

In reading manuscripts prepared by subject matter specialists, who may not be familiar with home study materials, we employ a series of checklists. These checklists, developed over 30 years of home study experience, enable us to evaluate manuscripts with a certain consistency and, at best, allow us to convert the manuscript into first-rate material and, at worst, eliminate obvious errors.

The First Lesson

Because one of the most essential parts of home study is a successful first lesson, we spend almost as much time on the manuscript for the first lesson as we do on such major items as writing course objectives and examinations. Over the years, we have devised a few general rules concerning the characteristics of a good first lesson.

In a good first lesson home study students need the following things:

1. **They need to be re-sold.** Part of our educational role is to reassure our students that we are what our representative or advertising said we were—a reputable home study school that can help them raise their income or otherwise improve their personal life.

2. **They need to be inspired.** They must be shown that what lies ahead is fun as well as work.

3. **They need success and renewed self-confidence**. They may have failed before; now, we **must** let them succeed. To do this, we must give them something they can conquer to reestablish their faith in themselves.

4. **They need clerical help.** They are lost with forms, second sheets, staples, paper clips, and instructions to "fold here."

To fulfill these needs, we devised a formula that tends to achieve high response. These are the characteristics of a good first lesson:

1. It is brief—no more than 20 printed pages.

2. It builds in a resale by briefly reiterating the benefits of the course, career potentials, and the school's credibility.

3. It inspires, which usually implies carefully selected artwork and supportive copy.

4. It contains a deliberately easy self-quiz, so that even before submitting the first examination, students clearly see they can do this work. In effect it sets up a series of successes that logically follow from a successful first step. "Success breeds success."

5. It gives students everything they need. They are never told: "On a plain piece of paper, sketch . . . ."

6. It is self-contained. Students are never asked to staple, clip, or attach anything, nor are they told to go out and buy something. All forms are preprinted for them.

7. It does not involve essays or projects that require literary or artistic skill. These "high-diving" challenges should come only after students have found they really can "swim" successfully.

8. Exam instructions are made obvious: it is literally impossible not to understand what is to be done.

9. The first lesson clearly explains what students are to do after they make their first submission. This information is placed so that students read it after they have mailed their first submission to us.

10. Because some students might possibly be offended by an overly simple first lesson, a courteous disclaimer frankly advises them that this is a warm-up exercise and that we shall shortly present them with more challenging materials.

11. The text starts with something familiar, so that the student is led from the known to the unknown.

12. It uses simple English.

13. The writing is appropriate for the estimated reading level of the audience.

If we made a checklist of these characteristics, we would then measure every first lesson against these points:

		YES	NO
1.	Is the reading under 20 pages?	☐	☐
2.	Is there at least a paragraph or two of resale?	☐	☐
3.	Is it properly broken up with motivational art?	☐	☐
4.	Is it generally non-technical and inspiring?	☐	☐
5.	Does it contain a confidence-building self-quiz?	☐	☐
6.	Does it provide the student with the actual sheet of paper on which to submit the exam?	☐	☐
7.	Is the examination sheet one page, so as to eliminate stapling, clipping, etc.?	☐	☐
8.	Are all forms preprinted so that only name and student number need to be filled in?	☐	☐
9.	Are both the reading materials and the examination sheet for the first lesson physically obvious in the first package the student receives?	☐	☐
10.	Is the examination free from essay assignments, projects, or artistic demands?	☐	☐
11.	Is there a disclaimer as to the ease of the first lesson and a pledge of some challenging material to come?	☐	☐
12.	Is there, immediately after the first submission, a very clear "where do we go from here" road map?	☐	☐
13.	Does the text instruct by going from the known to the unknown?	☐	☐
14.	Are all instructions crystal clear?	☐	☐
15.	Is the English simple?	☐	☐
16.	Is it written at the student's reading level?	☐	☐

A careful application of these principles to a revised first lesson for one NHSC school resulted in reducing a 42 percent non-start rate to 17 percent. Considering that tuition collection is directly related to lesson submission, this application of the checklist was both good scholarship and good business.

Capitalizing on the Good First Lesson

Assuming we've now managed to achieve the good first lesson, we must now follow the first lesson with an aftermath of excellence. We have found that the characteristics of subsequent lessons should follow these general guidelines:

1. Each lesson is just slightly more difficult than the preceding lesson, the increase rarely exceeding 10 percent in length.

2. At a certain point the course attains its standard level of complexity so that, after a handful of comparatively easy initial submissions, the student faces a body of work that is uniformly challenging.

3. Whenever new terms are used, they are careful explained and buttressed by examples.

4. Although it is a vice in residential teaching, purposeful repetition is a virtue in home study, where the best courses repeat, rephrase, reiterate, reemphasize, and restate. (Reinforcement is hard to overdo in home study.) Hence, a point made in lesson 2 might be restated in lessons 3, 7, and 32 with benefit to the student.

5. A certain degree of "comic relief" should be built in by including a bit of humor or a fun project. Home study need not be grim. As former President Eisenhower once put it, "You can smile, yet still be a serious person." Courses with high percent graduation rates frequently smile.

6. Exam questions are "fair and findable," as one scholar put it. No question should be deliberately inserted to separate the adults from the children. Nor should any question ever be unfindable.

7. The answer to every examination question should be found in either the text or a reasonable inference from the text. At no

time, for example, should exam 14 ask a question not covered until lesson 19. Exam questions should be in sequence. If exam question 12 is based on page 42, question 13 should be on page 42 or after, but never before page 42.

8. Examinations, like lessons, must follow the pattern of mild graduation of complexity. They should not, for example, leap from 10 true and false questions to eight demanding essay questions.

9. As in starter lessons, the instructions are clear. One home study author said this best: "Do not merely write instructions that can be understood. Rather, write instructions that cannot possibly be misunderstood."

10. There is a solid review of the past lesson as a foundation for the current lesson.

11. There is a preview of what lies ahead.

12. Most important of all, every lesson must seem "doable;" each lesson and examination must be of such a size and complexity that students should feel they can complete it in the very near and foreseeable future (e.g., tonight, Saturday, or this weekend). Lessons that may take a student several months to complete, simply, as a matter of home study reality, rarely get done.

13. If there are illustrations or other artwork, they directly support the instructional objective. Further, all supportive art should truly support. To do this, it is placed near the text it illustrates.

14. Lastly, students are supplied with everything they need. They should not be asked to scurry about to find paper, staples, or crayons. Nothing should require them to get up from their desk or table when they sit down to study a well-prepared lesson.

Compiling these formulations into a checklist, we evaluate subsequent lessons by answering these questions:

	YES	NO
1. Is each of the early lessons slightly harder and longer than the prior lesson, but not more than 10 percent more challenging?	☐	☐
2. Is a standard level of complexity attained at a certain point in the course?	☐	☐
3. Are new terms properly explained?	☐	☐
4. Are there adequate reinforcement methods?	☐	☐
5. Does the course "smile" occasionally?	☐	☐
6. Are test questions fair and findable?	☐	☐
7. Are the questions in proper sequence?	☐	☐
8. Do tests follow the pattern of graduated complexity?	☐	☐
9. Are instructions absolutely clear?	☐	☐
10. Is there an adequate review of prior lessons?	☐	☐
11. Is there an inspiring preview of what is coming?	☐	☐
12. Is every lesson and every test doable?	☐	☐
13. Does artwork support text?	☐	☐
14. Is artwork located close to the text it illustrates?	☐	☐
15. Are students supplied with everything they need?	☐	☐

How to Achieve High Graduation Rates

Let's assume that we now have achieved a first-rate opening lesson, followed by lessons that meet most of the characteristics on the previous checklist. What can we then do to achieve high graduation rates?

Although it may sound inane, short courses produce graduates; long courses don't. We continue to produce overly long courses mainly because of an honest Puritan ethic that instills in most authors and editors a sincere desire to make each course truly authentic. Can you have brevity and quality? Yes, and here is how.

Home study is, after all, **independent** study. Our problem is that we often tend to (1) give students more than they need to know to achieve the stated course objective, and (2) over test them to make sure they know their material. Once again, both author and editor have the highest ethical motivations: "We'll enrich the course so it has everything," and "Our examinations will be frequent and so hard that the respectability of our diploma will be indisputable."

However, when we go astray on these tangents, we forget the wisdom of Total Quality Management, which reminds us that our students are also our customers. They don't want to know everything and they don't want to convince everybody. Rather, they want to learn enough to get a job or perhaps to satisfy their own curiosity about a non-vocational subject.

If we remember our basic student commitment, our courses, while of the finest quality, should be spartan where frills are involved. Optional materials may abound for the ambitious student, but they should not be forced on the student who wants to learn and earn soon. Hence, our courses must constantly satisfy their stated objectives and exclude all extraneous items. Our examinations should ensure that, before a diploma is issued, students have indeed learned enough to meet their stated goals—and no more.

The result is a checklist with some basic questions by which authors and editors should measure every lesson and every course:

		YES	NO
1.	Do we have a clearly stated course objective in mind as we create this course of instruction?	☐	☐
2.	Is this lesson material necessary to achieve the stated objective?	☐	☐
3.	Is each examination necessary to demonstrate that the student knows enough to attain the stated objective?	☐	☐

	YES	NO
4. Are there enrichment and optional materials? (These must be, however, clearly designed as beyond the scope of the stated objectives.)	☐	☐
5. Is this course truly devoid of busywork projects so that nothing stands in the way of an expeditious submission of truly necessary examinations?	☐	☐
6. Over the long haul, is motivation built into each lesson?	☐	☐

Application of these guidelines to the manuscripts prepared by many accredited schools has resulted in increased completion rates.

What *Not* to Include—Copyediting the Manuscript

Copyediting is an essential step in the creation of a good home study course. We recommend this separate, close reading of the manuscript to amend the author's vagaries of spelling, capitalization, grammar, and other mechanics of style. The aim of good copyediting in the home study context is ensuring accuracy, clarity, friendliness, and simplicity. A professional copyeditor is the best person for this task, and many of them work on a freelance basis. In the absence of a copyeditor, someone in a related position often does the copyediting.

The following points guide a closer inspection of the manuscript.

1. The most obvious and important task is checking for correct spelling, grammar, and standard usage. Also verify that references to other parts of the text are accurate, and check the sequence of numbers.

2. The principle of keeping the course to the point, not giving students anything they don't need or that won't inspire them, can also be applied to words and phrases. Purposeful repetition for reinforcement is desirable in a home study course. Redundancy is not. "Cease and desist" is the classic example of redundancy. (These words mean the same thing.) Another species of extraneousness is the noun cluster. Three or more

nouns used to represent one idea give a text a consistency and appeal not unlike lumpy oatmeal. "Needs assessment analysis" may not be redundant, but for the average reader, "needs assessment" gets the same idea across more simply. "Assessment of needs" is even simpler and friendly.

3. Some authors have favorite words and use them when they really aren't appropriate. We won't deny an author his or her own vocabulary; that's a part of writing style. But, if a pet word is used incorrectly or superfluously, editing is indicated. Some authors write as they speak and pepper their writing with words such as "furthermore" and "as a matter of fact." These phrases are useful in moderation; be on guard to their frequency.

4. Choose one way of naming a thing and use it throughout the course. In most contexts, "microcomputer" and "personal computer" are synonymous. Using the terms interchangeably may confuse readers less certain of their meaning.

5. In manuscripts written by specialists, beware of using a tone that might be unfriendly to the student. Since home study students study independently, the text is their study companion. It would be unfortunate to work with a text that had an air of moral superiority or stuffy intellectualism.

6. Consider the diversity of your students, their age, sex, ethnicity, and beliefs. The text should be neutral and not offend. Use gender-inclusive language when possible. While older persons may not be offended by the presumption that "he" includes women, younger persons often are.

7. A detached, uninteresting text is usually written in the third person. "Students should answer the following questions before proceeding to the next section." A friendlier way of saying this is, "You should answer the following questions before proceeding to the next section." Speak to the reader directly. He or she is listening!

8. You've heard this one many times before: write with active verbs. Passive verbs are necessary and even desirable in some circumstances. But active verbs are more interesting and add a human element.

The following checklist summarizes these major copyediting targets (this is not an exhaustive list):

	YES	NO
1. Has the course been copyedited with an ear to common grammatical pitfalls (e.g., subject-verb agreement, dangling or misplaced modifiers, unclear antecedents)?	☐	☐
2. Have redundancies been eliminated?	☐	☐
3. Has overuse of an author's pet word or phrase been eliminated?	☐	☐
4. Are terms referred to consistently?	☐	☐
5. Is the tone friendly?	☐	☐
6. Is the tone of the course neutral and respectful of the diversity of students?	☐	☐
7. Is the text written in the second or third person?	☐	☐
8. Are the verbs active or passive?	☐	☐

Conclusion

While there may very well be manuscripts that do not conform with all of the points raised in the checklists presented above, any manuscript that has been edited to conform with these checklists will not go too far astray from meeting the demands of the home study student in a highly satisfactory form.

As one diplomat has commented, "War is too important to be left to generals." By the same token, home study education manuscripts are far too important to be left to writers. When the manuscript comes to the home study school, it is one of the cardinal duties of the Educational Director and his or her editorial associates to take the raw material, which may well be substantially sound, and convert it into home study material that will reflect favorably on the school, the profession, and the method of instruction. Most important of all, the material must bring the maximum possible benefit to the home study student.

The above manuscript checklists can work well in either for-profit or not-for-profit institutions. This is perhaps because they embody a type of curricular Golden Rule: "Write unto others as you would have them write unto you."

The following pages contain a Course Development Plan which was developed by Dr. Charles Marshall at The Hadley School for the Blind.

Appendix

Course Development Plan

Tentative Course Title: ______________________________

Director: ______________________________

Associates: ______________________________

Long Range Plan Reference: ______________________________

Due Date

I. Needs Assessment/Priority

- A. Determine, define and document need ______________ ________
- B. Define the resultant consumer ________
    - 1. Size of population ______________
    - 2. Reading level (education) ______________
    - 3. Preferred media ______________
    - 4. General demographics: ________
        - a. age ________
        - b. gender ________
        - c. location ________
        - d. agency relations ______________
- C. Establish priority ______________ ________

II. Budgeting and Approval

- A. Determine budgetary viability (cost benefit) ______________ ________
    - 1. Is a grant needed or available? ______________
    - 2. What is in-house cost estimate? ______________
    - 3. Apply NHSC budget checklist ______________
- B. Secure Board approval, if needed ______________ ________
    - 1. Prepare a summary for Board ______________
    - 2. If approved, note in minutes ______________

III. Third Party Approval

- A. Are we in conformity with accrediting standards? ______________
- B. Is any accrediting body approval needed? ______________ ________
    - 1. Prepare summary ________
    - 2. Make inquiry ________
    - 3. File reply, approval ________
- C. Is any other agency approval and guidance needed? ______________ ________
- D. Secure publisher permission ______________ ________

Due Date

IV. Prepare General Learning Objectives
- A. Review panel recommendations
- B. Prepare learning objectives
- C. Determine especially if course will be:
  1. Home study
  2. Self-application
  3. Self study
  4. A blend

V. Textbook or Author Decision
- A. Determine if existing texts in appropriate media meet objectives
- B. If a text is not available, select text for adaptability to blind

VI. Author Search/Contract
- A. Select author based upon
  1. Credentials/reputation
  2. Prior track record (samples of writing)
  3. Has the time and health
  4. Is willing to contract
- B. Execute author for hire contract
  1. Time schedule
  2. Compensation
  3. Releases
  4. Specific instruction
  5. Stated objective
  6. Commitment to follow guide
- C. Monthly telephone follow-up author contact

VII. Preparing the Outline
- A. Author's outline submitted (includes refined chapter level objectives)
- B. Outline review, adjustment and approval
- C. Third party review of outline

Due Date

VIII. Samples First Lesson and Test

- A. Review sample lesson ____________ ________
  - 1. Apply at least one level test from among ____________ ________
    - a. Flesch
    - b. Dale-Chall
    - c. Fog Index
    - d. Forcast
  - 2. Conformity to objectives ____________ ________
  - 3. Determine test match to objectives ____________ ________
  - 4. Third party sample reviewer ____________ ________

IX. Text Creation

- A. Author submits first one-half ____________ ________
- B. Upon approval, completes second half ____________ ________

X. Editing the Text

- A. Determine home study, self-study, or self application ________
- B. Apply the 37 point checklist of NHSC Course Creation Manual ________
- C. Edit with special attentiveness to media adjustments ________

XI. Independent Review

- A. Project leader and/or committee review ____________ ________
- B. If original text, at least two reviewers ____________ ________
- C. If study guide, at least one reviewer ____________ ________
- D. When appropriate, review by present or former students ____________ ________
- E. Where appropriate, review by affiliate ____________ ________

XII. Creation of the Pilot Group

- A. Select pilot group teacher ____________ ________
- B. Determine size and scope of pilot group ____________ ________
- C. Prepare response survey format ____________ ________
- D. Analyze results of pilot group ____________ ________

Due Date

XIII. Preparation of First Edition
- A. Integrate results of pilot group ____________ ______
- B. Perform second editing ____________ ______
- C. Prepare a limited number of first edition texts ____________ ______
  - 1. Braille ______
  - 2. Audio ______
  - 3. Large print ______
- D. Strive to create media for simultaneous delivery ____________ ______
- E. Submit first edition for Accrediting Commission approval ____________ ______
- F. Determine packaging ____________ ______
  - 1. Number, sequence and nature of packages ____________
  - 2. Attractiveness ____________
  - 3. Postal security ____________
  - 4. Modular for better updating ____________

XIV. Marketing the First Edition ____________ ______
- A. Prepare newsletter announcement ____________ ______
- B. Notify affiliates ____________ ______
- C. Notify relevant agencies ____________ ______
- D. Prepare catalog, brochure information ____________ ______
- E. Prepare 1-2 page summary ____________ ______
- F. Add catalog announcements ____________ ______

XV. Monitoring and Revising the First Edition ____________ ______
- A. By EDP, measure at 6, 12, and 18 months ____________ ______
  - 1. Starting rates ______
  - 2. Completion rates ______
  - 3. Graduation rates ______
- B. Review graduate course survey forms ____________ ______
- C. Review teachers regarding communications ____________ ______
- D. Integrate Accrediting Commission reviewers' suggestions ____________ ______
- E. Prepare text for final edition ____________ ______

Chapter Seven

Managing Text Readability

by
H. Lee Hughes
Director of Education and Operations
Marine Corps Institute

The Author

A former Marine Corps officer, Lee joined the U.S. Marine Corps Institute in Washington, D.C. in 1962. He is a member of the NHSC Research and Educational Standards Committee, and served as Chairman of the Committee for several years.

A recipient of the NHSC Distinguished Service Award in 1984, Lee has given sessions at various NHSC Workshops and Conferences over the years. He has also served on more than 20 Accrediting Commission evaluation teams. Acknowledged as one of the leading Directors of Education in NHSC with more than three decades of experience, Lee is always willing to share his wealth of knowledge about home study.

Introduction

An essential skill required of home study educators is the ability to do reading level checks of all course material submitted for student use. Too often, ignoring the reading level of a course, or mismatching a target student audience with an inappropriate reading level in texts, has led to student frustration and excessively high course drops outs. Here, we will look at four reading level formulas.

With the following words, the late James E. Allen, U.S. Commissioner of Education, launched a campaign against the blight of illiteracy which, paradoxically, thrives within the most highly educated and technologically advanced civilization in the world. One man writes of his walk among the craters of the moon; another of his countrymen is unable to read about it!

> *Imagine, if you can, what your life would be like if you could not read or if your reading skills were so meager as to limit you to the simplest of writings, and if for you the door to the whole world of knowledge and inspiration available through the printed word had never opened.*
>
> *For more than a quarter of our population this is true. For them education, in a very important way, has been a failure, and they stand as a reproach to all of us who hold in our hands the shaping of the opportunity for education.*
>
> *These individuals have been denied a right—a right as fundamental as the right to life, liberty and the pursuit of happiness—the right to read.*[1]

Role of Education Director

This is the setting in which Educational Directors exercise their skills. They seek to teach students by the written word, when a great portion of their target population either cannot read or has a difficult time reading. At the same time, they are producing excellent course materials which have been written by highly qualified subject matter experts. These experts, who are writing about their areas of knowledge, tend to write at the level of their own proficiency. Many of the basic concepts are taken for granted or considered to be common knowledge, when in fact they may be mind-boggling to a beginner and even worse to a beginner who has a reading problem. It is a difficult task for a writer with an advanced degree of knowledge in a particular subject area to write about that subject at the elementary school level that may be required. It is also difficult to tell someone how to write so that the material can be read and understood by a particular target population.

---

[1] Thomas Sticht, ed., *Reading for Working: A Functional Literacy Anthology*, Human Resources Research Organization, Alexandria, Virginia, 1975.

Why Check Course Readability Levels?

When writing for students with low reading levels, simply using short words and short sentences does not assure readability. Because most reading level formulas use sentence length and number of syllables as key factors in the determination of the numerical grade level, obviously the smaller numbers derived from short sentences and short words will produce a low grade level. However, all occupations have their own language or vocabulary that is usually readily understood by persons in the occupational field. Much of the vocabulary may be three-syllable words which are common terminology and may be more easily identified and understood than a contrived sentence designed to eliminate polysyllabic words. An example of this is in the automotive field where words such as "transmission" and "differential" are common to any mechanic, but because of the number of syllables, such terms greatly inflate the computed reading level of the written material which contain these words.

Clearly there exists a general problem of matching course materials to average reading grade levels of students. The materials should be as basic as possible to appeal to the average student, but not so over-simplified that the students are insulted by the feeling that you are "talking down to them." The comic book approach, for example, does not appeal to everyone, especially when used for instructional purposes.

It appears that the "best" method of writing to a particular grade level is to have the authors periodically test samples of the course materials as they are being written with a reliable reading grade level formula. A review of the literature shows the existence of more than 50 formulas for determining reading grade level. They range from the sublime to the ridiculous in their ease of use (based primarily on the mathematical rigor or counting procedures involved). Many of the formulas have high reliability when compared to others.

The problem of selecting the best formula for your situation then becomes a matter of personal preference. For whatever reason you select a formula, stick with it and rely on it as an indicator. Do not regard it as the sole judge of readability and don't skip from formula to formula just to find something to validate your opinion of the readability of your instructional materials.

In the past, some schools had refused to use a reading level formula. They dismissed reading difficulty or the assessment of reading levels as not being a problem. They stated that they intuitively knew that their courses were matched to the reading levels of their intended students. Although this may be true, it is a cavalier attitude that is difficult to substantiate if one analyzes today's completion and graduation rates. Readability of materials may be a reason for low graduation rates in courses.

With this in mind, the Accrediting Commission of the National Home Study Council requires that a school do a readability check for all of their course materials. Question 20 in the "Guide to Self-Evaluation" states:

> *Provide results of the most recent readability tests or checks of courses and describe how tests were conducted. How does the institution assure that the reading level of instructional material is keyed to the reading competence of the average enrollee? Please include results of any analysis which demonstrates that students who possess only minimum admission requirements are able to comprehend the material* (excerpt from page 57 of *"Home Study School Accreditation: Policies, Procedures and Standards,"* June 1992).

Reading Level Formulas

As we already mentioned, there are several reading level formulas. The four most popular are:

- Flesch Reading Ease Score
- Dale-Chall Formula
- Gunning's Fog Index
- Forcast

Each formula has its advantages and disadvantages. Make some comparisons and then select one that is suitable for your situation.

Today, most readability formulas are computed by using software programs which run on PC's. Here we will briefly explain how the formulas work.

• Flesch Reading Ease Score

Rudolf Flesch is no stranger to correspondence study. A one-time member of the Famous Writers School guiding faculty, he also assisted the Federal Trade Commission in making its ill-fated trade school rule more readable to prospective students. Together with Gunning Fog's Index, the Flesch score is perhaps one of the most popular checks on readability.

The Flesch score involves a formula and a table which is provided below. The formula is: Reading ease score = 206.835 - [1.015 (average sentence length) + .846 (syllables per 100 words)].

To use the formula, you first select a passage and count 100 words. Next, divide the 100 words by the number of sentences comprising these 100 words. Insert this figure in the formula as the "average sentence length." Next, count the number of syllables (as spoken) in the 100 words. Insert the result in the formula. By performing the mathematics involved in the formula you will obtain the reading ease score. The grade level for the passage is obtained by referring to the following table:

Flesch Reading Ease Score Table

Score	Interpretation	Grade Level
90-100	Very Easy	5
80-89	Easy	6
70-79	Fairly Easy	7
60-69	Standard	8-9
50-59	Fairly Difficult	10-12
30-49	Difficult	13-16
0-29	Very Difficult	College Graduate

- **Dale-Chall Formula**

The next formula is the Dale-Chall formula. In order to use it you must consult the *Dale List of 3000 Familiar Words*, available in most texts on readability. The formula is:

$$\text{Raw score} = .1579\,x_1 + .0496\,x_2 + 3.6365$$

x_1 = Percent of words not on *Dale List of 3000 Familiar Words*
x_2 = Mean sentence length in words.

The first step is to count 100 words like you did for the Flesch formula. The next step is to determine how many of the 100 words are not on the Dale list. Proper names are not counted.

Let's say in the 100 words we are reviewing, there are 18 words that are not on the Dale list and the average (mean) sentence length is 33.3 words. Insert these figures in the formula and compute:

$$\begin{aligned}\text{Raw score} &= .1579\,x_1 + .0496\,x_2 + 3.6365\\ &= .1579\,(18) + .0496\,(33.3) + 3.6365\\ &= 2.842 + 1.652 + 3.6365\\ &= 8.1305\end{aligned}$$

Reference the raw score to the following table and you will see that the raw score of 8.1305 is equivalent to an 11-12th grade reading level.

Raw Score Table for Dale-Chall Formula

Formula Raw Score	Corrected Grade-Levels
4.9 and below	4th grade and below
5.0 to 5.9	5-6th grade
6.0 to 6.9	7-8 grade
7.0 to 7.9	9-10 grade
8.0 to 8.9	11-12th grade
9.0 to 9.9	13-15 grade (college)
10.0 and above	16 + (college graduate)

• Gunning's Fog Index

Again, using a sample paragraph of 100 words, use the following steps:

1. Assign a value of one to all one- and two-syllable words.
2. Assign a value of three to all remaining words.
3. Determine Fog count by adding the values.
4. Divide the Fog count by the number of sentences.
5. If the average Fog count is over 20, divide by 2 to obtain grade level.
6. If the average Fog count is under 20, subtract 2 and then divide by 2 to obtain grade level.

• Forcast

Another formula that may be used to determine reading grade level is called Forcast. It is an acronym of the names of the three men who devised the formula. Forcast was developed primarily for use with military, technical publications, but has applicability to other technical material. It takes into account the use of polysyllabic words that are known to the reader because of their use in the reader's occupation. It is an exceptionally rapid means of determining reading grade level if it is applicable to your school's materials.

$$\text{Reading grade level} = 20 - \frac{[\text{\# of one-syllable words in 150}]}{10}$$

Again using a sample paragraph of 100 words, let's say there are 97 one-syllable words. Insert that figure in the formula and compute the grade level.

$$\begin{aligned}\text{Reading grade level} &= 20 - \frac{97}{10}\\ &= 10 - 9.7\\ &= 10.3\end{aligned}$$

This is between the 10th and 11th grade which equates to the scores of the Flesch and Dale-Chall formulas.

As you can see from the four formulas above, the length of sentences and the number of syllables are the key determinants of reading grade level when you are using a formula. Theoretically then, short sentences and words should produce a low reading grade level.

Computerized Readability Formulas

Although computerized readability programs have been used since the 1970s, it is only in the past couple of years that they have been available for PC's. They are quite affordable today.

There are several sophisticated programs available that provide an array of features, readability measures being just one. For example, **Grammatik 5** boasts "a completely new grammar checking technology based on the linguistic science of morphology." Grammatik 5 contains 13 features designed to improve writing and communicate more effectively.

Grammatik 5 spelling checker contains more than 100,000 words. The program computes three readability formulas: The Flesch Reading Ease Score, Gunning's Fog Index, and the Flesch-Kincaid Grade Level.

Another program, called **Correct Grammar,** doesn't state which formulas it uses, but it "lets you know if a sentence is too difficult for your audience."

RightWriter also does not indicate the formulas used, but "you have the power to customize your editing and evaluate your documents for readability and strength." (see Appendix).

Professional Write 2.2 computes readability using a bundled Grammatik 4 package (the older version of Grammatik).

Write Now includes Grammatik MAC and, as in the other programs mentioned, has the readability formula embedded in the program with additional software features designed to improve writing.

The level of sophistication of all of this software and the apparent ease of use are impressive. However, the same caution applies here as with manually derived readability indices. Uncritical acceptance of any readability scores should be avoided.

Conclusion

Formulas are not infallible measures for testing reading difficulty, and they should never be permitted to take the place of your professional judgment. However, using a formula to aid in making a judgment is a more valid method of determining reading grade level than relying solely on intuition. Dismissing the use of the formulas without experimenting with them to get a feel for their applicability to your course materials is tantamount to ignoring a national problem. Everyone does not read at the same rate or at the same grade level. Your students deserve to be able to read what they are buying from you.

Appendix

Summary

```
RightWriter analyzed the document D:\wp51\docs\writers.wp
using the style file c:\dos\right\general.rwt. This style file is for
general business writing. The document was produced by
WordPerfect (5.0 or later).

Readability Index: 7.44
        4th        6th        8th        10th        12th        14th
        ¦*****¦*****¦*****¦**
        Simple        ¦ ------ Good ------------¦                Complex

Readers need a 7th grade level of education.
        Flesch Index: 64.94
        Fog Index: 9.68
                  Number of Words within Sentences: 313
                  Average Number of Syllables/Word: 1.52
                  Average Number of Words/Sentence: 13.04
                  Use of Shall: 0
                  Use of Must: 0
                  Use of Can: 0
                  Use of May: 0

Strength Index: 0.68
        0.0                    0.5                    1.0
        ¦*****¦*****¦*****¦*****¦*****¦***
        Weak                                          Strong
You can make the writing more direct by using:
                  - shorter sentences
                  - fewer weak phrases
Descriptive Index: 0.70
        0.0                    0.5                    1.0
        ¦****¦****¦****¦****¦****¦****¦****
        Terse  ¦----------------Normal-------------------¦  Wordy

Jargon Index: 0.00
Sentence Structure Recommendations:
        14. No Recommendations
```

Chapter Eight

Writing Examinations

by
Adelaide K. Cherry, Ph.D.
Chief of Educational Technology
Air University of the U.S. Air Force

The Author

Dr. Cherry received her Bachelor of Science degree in 1970, a Master of Arts in history in 1974, and a Ph.D. in Administration and Higher Education in 1977, all from the University of Alabama. She joined the Federal Civil Service as an education specialist at the Extension Course Institute (ECI) writing text and tests for the Air Force's correspondence education program. In addition, she directed and instructed in the ECI course for authors. In 1991, she assumed her present position at Air University Headquarters.

Dr. Cherry has lectured and conducted workshops and training seminars in management, test development, and educational technology, including presentations at NHSC Workshops.

Introduction

Most people look at a test as little more than a device for measuring student knowledge. Test constructors, however, must look at testing in several ways. Not only must a test accurately measure student mastery of learning objectives and reinforce learning, it must give feedback on overall student progress and gauge the effectiveness of course materials. For those of us in distance education, testing is serious business!

This chapter presents basic test construction principles. It addresses considerations for selecting the type of test item to use, the relative advantages and disadvantages of multiple choice and essay items, and general suggestions for writing each type. Finally, it concludes with comments about the potential for electronic testing in distance education/home study.

Characteristics of Evaluation

When developing a test, you should first consider the five characteristics of evaluation: validity, reliability, objectivity, comprehensiveness and usability. Careful consideration of these characteristics will help you determine the type of test items to use.

- **Validity** is the degree to which a test actually measures the learning objectives. A valid test measures mastery of essential information and indicates that students are learning what they are supposed to learn.

Before you write a single test item, you must decide which topics are the important ones to be tested. Take a good look at the purpose of instruction, proficiency codes, learning objectives, or behavioral objectives developed for the course. Formulate test questions for a new course at the same time the objectives are written. For existing text, let the objectives be your guide for writing new test items.

You should test only the important topics, deciding which aspects of each topic to emphasize and determining the level of learning to be measured. In doing this, you lay the groundwork for the construction of a valid examination. Here are some examples of learning objectives and corresponding multiple-choice and essay test items. Notice how the language of the objective is sometimes used in the question to help ensure validity.

Examples:

Obj: Identify basic facts and terms (about the subject).

Item: What is the technical definition of the term "production"?

a. Any natural process producing food or other raw materials.
b. The creation of economic values.

c. The manufacture of finished products.
d. The operation of a profit-making enterprise.

Obj: Analyze facts and principles and draw conclusions (about the subject).

Item: A piece of lead suspended from one arm of a beam balance is balanced with a piece of wood suspended from the other arm. Why is the balance lost if the system is placed in a vacuum?

a. The mass of the wood exceeds the mass of the lead.
b. The air exerts a greater buoyant force on the lead than on the wood.
c. The attraction of gravity is greater for the lead than for the wood.
d. The wood displaces more air than the lead.

Obj: Convert binary and decimal numbers.

Item: What is the binary equivalent of 634(10)?

a. 1110001011.
b. 1000111010.
c. 1100111010.
d. 1001111010.

Obj: Summarize the importance of a sound code of ethics for a military professional.

Item: In 100 words or less, explain why a sound code of ethics is important for a military professional. This question is worth 20 points. It will be scored on content only and partial credit will be given. You may use examples from course materials or other examples to support your answer.

Obj: Apply principles learned to new situations.

Item: If the radius of the earth were increased by 3 feet, its circumference at the equator would be increased by about how much?

a. 9 feet.
b. 12 feet.
c. 19 feet.
d. 28 feet.

- **Reliability.** Another characteristic of a good test is reliability. This term refers to how consistently a test yields the same result. Low reliability means the test cannot be depended upon to show the same result about the same kind of student each time it is used.

Reliability is determined over time. You must use and score a test several times before reliability can be interpreted. Some items lend themselves well to statistical analysis, and reliability can be measured for those types rather easily.

Some tests—multiple choice, matching, and true-false—usually require less time for the student to complete than others. This makes it possible to include a large number of items on an objective examination. The greater the number of items on an exam, the wider the sampling of the text content, and the greater the reliability of your examination as a whole.

- **Objectivity** is achieved when you do not introduce personal bias into the questions or the score. It means that a student receives the same mental picture from reading a test question as you did when writing it. Also, the scoring of the objective examination is free of the scorer's bias so there is no doubt about the correctness of a particular answer.

In an objective exam, the standards of scoring are perfectly clear. The standards for a subjective examination, on the other hand, are not always clear. This does not mean that objective examinations are definitely superior to subjective examinations, but objective questions do have advantages which make them especially efficient in certain circumstances. You can develop procedures (discussed in a later section of this chapter) to improve the objectivity of your essay tests. Whether or not you use an essay item on your test should depend on the purpose and objectives of the course.

- **Comprehensiveness** is the test characteristic that requires a liberal sampling of whatever is being measured. For example, suppose the owner of a grain elevator wants to evaluate a carload of wheat. To make sure that all of the wheat is healthy, the owner would examine several test tubes of wheat from different locations and levels throughout the carload. If he examined only the wheat on the top, he could get an unrepresentative sample.

Likewise, your test must include a representative and comprehensive sample of the applicable objectives. It should sample liberally a student's ability to state facts, apply principles, and analyze information if the objectives indicate he must do so.

A well-constructed essay item can be comprehensive in nature. One item can require a response that synthesizes several objectives and incorporates various levels of learning. If you use another type of question, a larger number of items is required to achieve comprehensive coverage of content and objectives.

- **Usability.** A usable test is easy to develop, administer, score, and interpret. It is also easy for the student to read and understand. Selection items—multiple-choice, true-false, and matching—are all easy to score, and easy to analyze statistically and interpret. The multiple-choice item, however, is difficult to construct. The essay item is relatively easy to construct, but harder to score and analyze.

Sometimes to be usable, an item must be **flexible.** Flexibility means the item is capable of measuring a broad range of skills. If you are required to measure objectives in the affective domain (the attitude and beliefs of the student are important), or assess individual abilities such as writing skills, communication skills, and organizational skills, you will want to use an essay item.

Multiple-Choice Testing

Based on the five characteristics listed above, there are several advantages to multiple-choice testing. Well-constructed multiple-choice questions can test almost any subject. If constructed properly, the multiple-choice item can measure most of the important educational results, including knowledge, understanding, or judgement. Almost any ability or understanding that can be measured by another form of examination item, whether objective or subjective, can be measured by multiple-choice items.

A multiple-choice item, furthermore, is less vulnerable to chance errors from student guessing than are other forms of objective items, such as matching or true-false. It is statistically superior to other objective types and to subjective items in measuring educational achievement. Reliability can be easily established.

Suggestions for Preparing Multiple-Choice Items

A multiple-choice item has two parts: 1) an **item stem** that asks a question, gives a direction, or gives an incomplete statement; and 2) a number of **alternatives** from which the student selects the correct response. Alternatives which are not correct are referred to as **distracters**. First, let's look at principles for writing the item stem.

Item Stem:

1. Use a verb in the stem to assure a central thought. Include all information necessary for the student to understand the intent of the item. Here is an example of a poor item stem. It is unclear from reading the stem, as well as the alternatives, whether the intent is for the student to define the term or state its functions.

   Original Item:

   A performance standard—

   a. defines the job task.
   b. determines a strong work objective.
   c. is used to develop a flexible work plan.
   d. defines the quality and quantity of work needed to meet realistic goals.

   Improved Item:

   What is a performance standard?

   a. A statement of job tasks.
   b. A strong work objective.
   c. A flexible work plan developed to meet work objectives.
   d. A statement of the quality and quantity of work needed to meet objectives.

2. Make sure the item stem can stand alone out of context. For example, if a student has studied about several pieces of equipment, you must clearly indicate in the stem which piece of equipment is the subject of the item. Also, you must state all pertinent information about the problem. Notice how the stem in this example was improved by adding specificity.

   Original Item Stem:

   > What change occurs in the composition of the air in a room in which green plants are growing?

   Improved Item Stem:

   > What change occurs in the composition of the air in a lighted room in which the only living things are growing plants?

3. Use language that is direct, simple, and free of ambiguity. Do not make an item a test of reading ability. Use the active voice where possible (at least, often). Avoid use of contractions. Here is an example of how a needlessly complex item stem can be improved.

   Original Item Stem:

   > A functional grouping of closely related personnel positions on the basis of similarity of education, training experience, and other abilities required to perform them is referred to as

   Improved Item Stem:

   > A grouping of tasks that require similar qualifications of the people who do the tasks is known as

4. Emphasize (italicize, boldface or capitalize) key words in the stem. Use negatives sparingly, but always emphasize negative terms used in the stem. If you ask for an evaluation in the stem of an item (i.e., "best", or "most"), be sure that you are indeed requiring the student to identify the "best" or the "most" of several options, rather than to distinguish between the correct and the incorrect.

Example:

A student's ability to organize material is BEST measured by using which type of written test?

5. Avoid using clue words in the stem that give away the answer. If there is a similarity between the stem and the correct answer in wording, phraseology, or grammatical construction, and if this similarity is not maintained between the stem and other options, the student can respond on the basis of the clue alone. Also, avoid the tendency to use "textbookish" wording in the correct answer if you do not also use such wording in the other options. In the following example, the clue words are obvious and the answer is a "give away."

Example:

When the manufacturer laminates a layer of rubber to cotton duck, it is called

a. fire retardant.
* b. rubberized duck.
c. mildew resistant.
d. damage resistant.

6. Place common wording in the stem. It is less confusing for the student and makes the item easier to read and interpret.

Original Item:

The same job control number is used for every action taken EXCEPT when the actions

a. involve different workcenters.
b. involve different discrepancies.
c. involve different times.
d. involve different places.

Improved Item:

The same job control number is used for every action taken EXCEPT when the actions involve different

a. workcenters.
b. discrepancies.

c. times.
d. places.

The Alternatives:

7. Make options parallel in category, structure, and length. Avoid any tendency to make the correct answer longer than the distracters. Write the distracters with as much care and precision as the correct answer so that all alternatives are equally attractive to a student who guesses. Notice how the wording was changed in the improved item to make the correct response consistent with the distracters.

   Original Item:

   Some cases of lung cancer have been attributed to smoking. What was the status of this theory in 1953?

   a. The theory had been clearly established by medical evidence.
   * b. It was a controversial matter and some experts considered the evidence to be inconclusive.
   c. The theory had been clearly disproved by surveys of smokers.
   d. The theory was such a recent development that no tests of it had been developed.

   Improved Item:

   Some cases of lung cancer have been attributed to smoking. What was the status of this theory in 1953?

   a. It had been clearly established by medical evidence.
   b. It had been clearly disproved by surveys of smokers.
   * c. It was controversial and the evidence inconclusive.
   d. It was so recent that no tests of it had been developed.

8. Make sure each option fits the stem grammatically. If you use a plural verb in the stem, make sure all of the options are plural. Also, be sure you use correct punctuation. The use of the article "an" in this example gives away the correct answer.

Original Item:

If your developer solution is too high (strong), you should add an

a. potassium compound.
b. sodium solution.
* c. acid solution.
d. sulfate solution.

Improved Item:

If your developer solution is too high (strong), add

a. potassium compound.
b. sodium solution.
* c. acid solution.
d. sulfate solution.

9. Use plausible alternatives. Make sure the distracters are strong enough to attract the misinformed and the careless, rather than being just a random set of irrelevant responses. One way of obtaining plausible distracters is to use statements which are true but do not meet the requirements of the stated problem. This technique is used in the following example in which both a and b are true statements but do not answer the question.

Example:

What is the principal advantage of a battery of lead storage cells over a battery of dry cells for automobile starting and lighting?

a. The storage cell furnishes direct current.
b. The voltage of the storage cell is higher.
c. The initial cost of the storage cell is less.
* d. The current from the storage cell is stronger.

The distracters in the following example are absurd, and the item is a "give away."

Example:

Although you are given the authority to wear the Security

Badge, you must NOT

* a. abuse the authority.
b. take off the badge.
c. clean the badge.
d. wear the badge in formation.

10. Provide **one clearly correct answer**. Many items have been deleted from exams because they had more than one correct answer. The answer must be supported by the learning materials but, regardless of what the text supports, an item must have only one correct answer in reality. Notice how the following distracters could be correct for some students.

Example:

The plan for your weight program should include

a. an increase in caloric intake.
b. a decrease in caloric intake.
* c. a diet in balance with energy expended.
d. daily weightlifting for all major muscle groups.

11. Arrange numbers in ascending or descending order. Students expect answers to be in their logical place sequentially. Also, when students guess on these type questions, they tend to select "in-between" alternatives.

Original Item:

What number is w if w + 12 = 30?

a. 28.
* b. 18.
c. 42.
d. 12.

Improved Item:

What number is w if w + 12 = 30?

* a. 18.
b. 20.
c. 28.
d. 42.

12. Avoid catch-all options (all of the above, none of the above, both a and b). These tend to be the correct answer and are usually "give aways."

13. Avoid absolutes in the options, for example, "always," "every," "all," "never," etc. Items should test something more sophisticated than a student's ability to recognize that statements are seldom universally true. Avoid hedgers, like "usually" and "sometimes;" they may give away the correct answer.

14. Make sure that the correct response is supported by the course materials. Students should not be held accountable for information learned outside the scope of the course, unless it is prerequisite knowledge.

Essay Testing

An essay is an item that presents a task to which the student is expected to write a literary composition of at least one paragraph, but normally not more than several pages. It is clear that essay testing has certain advantages when considering the characteristics of evaluation. Essay questions can be comprehensive and flexible enough to measure a broad range of abilities. They are extremely effective for measuring comprehension and application skills, as well as intellectual and affective objectives. Essay items are difficult to score and often lack objectivity. Because problems related to objectivity can be minimized, this type item is becoming more widely used in distance education.

Unlike the multiple-choice item, essay items are very effective for evaluating a student's ability to:

- Produce, organize, and express ideas.
- Integrate learnings from different areas.
- Compare/contrast ideas.
- Discuss cause/effect ideas.
- Outline, summarize, or describe concepts.
- Apply principles to situations.
- Analyze or evaluate concepts.
- Create new ideas or approaches.

Suggestions for Preparing Essay Questions

1. Use essay items to measure achievement at the comprehension level or higher.
2. Use language that is clear to all students.
3. Increase the number of items and decrease the amount of discussion required for each.
4. State a time limit or limit the number of words in the answer.
5. Explain the scoring process—partial credit and percent of total score.
6. Avoid making the answer to the one item the basis for a second item.
7. Tell whether grammar, organization, neatness, or spelling affect the score.
8. Arrange questions in a logical order.

The following example shows how an essay question can be designed to measure more than one affective objective. The test question gives the student all of the required parameters for answering the question. Also, the student knows how the item will be graded.

Example:

> ***Obj***: Summarize the pros and cons of a professional reading program for employees.
>
> ***Obj***: Value a regular program of professional reading.
>
> ***Item***: In 500 words or less, present arguments to support your views concerning the desirability or non-desirability of a professional reading program. In your answer, address the pros and cons of a professional reading program from the standpoint of both the employee and management. This question is worth 20 points; five points will be based on the strength of your arguments in justifying your position. Fifteen points will be given

> for accurately summarizing the pros and cons presented in the course materials. Partial credit will be given. This question will be graded on content only.

Scoring Essay Examinations

There are several things you can do to limit bias in grading essay exams. These procedures will help ensure a valid test and an objective scoring process.

1. Prepare a test item descriptor which clearly relates the test item to the objectives being tested.
2. Prepare a key in advance showing what points should be covered in the answer.
3. Read all answers to one question before going to the next.
4. Grade the papers as anonymously as possible. In other words, it is best if you cannot identify the student while grading the essay.
5. Write comments and correct errors. This can be important feedback for the student.
6. Try to score all the responses to an item without interruption.
7. If possible, have the papers read by two independent readers.

Here is an example of an item descriptor developed for an essay test. It relates the test item to the expected outcome or objective. Developing a test item descriptor can be very important for ensuring validity. Notice how the test item gives specific information—lack of detail in presenting an item's task is the primary reason essay items are reputed to measure only writing skills rather than intended objectives. The answer key gives a model answer that can be used by the scorer to rate the student's response.

Test Item Descriptor:

> Given the requirement to summarize the concept of effective hospital guest relations, write a substantially reworded definition in 300 words or less that considers the working definition and the essential attributes covered in the lesson.

Test Item:

In 300 words or less, write a personal definition of effective guest relations in a hospital setting. The working definition that was used in the course should serve as a basis for your answer. Also, critical and variable attributes must be addressed in your answer. The question will be scored on content only. No points will be deducted for spelling or grammatical errors. The question is worth 30 points and partial credit will be given.

Essay Key:

Student's definition must be a synthesis of the working definition as well as all critical and variable attributes taught. Essential information to be included:

1. (5 points) Effective hospital guest relations is a process of communication in which hospital employees show caring and concern for every guest—patients and visitors alike. This is from the working definition.

2. (5 points) Must take place in a hospital setting or be related to a hospital stay. A telephone call to the hospital regarding a patient is considered an example. This is a critical attribute.

3. (5 points) Inherent part of the communications process. The potential for effective relations occurs each time a hospital employee or representative interacts, directly or indirectly, with a guest. This is a critical attribute.

4. (5 points) Involves observable behaviors. These behaviors are verbal or non-verbal and effective behaviors can be identified and practiced by the hospital staff. This is a critical attribute.

5. (5 points) To be effective, the communication must be judged effective by the guest. The perception of the guest is the only measure of success. This is a critical attribute.

6. (5 points) Because of the trauma of hospitalization and the impact the hospital has on a guest, the guest may have some negative attitudes which the hospital employee will have to overcome. This is a variable characteristic.

Some Differences Between Essay and Objective Tests

1. An essay question requires the student to plan his or her own answer and express it in his or her own words. An objective test item requires the student to choose among several designated alternatives.

2. An essay test consists of relatively few, more general questions that call for rather extended answers. An objective test ordinarily consists of many rather specific questions requiring only brief answers.

3. Students spend most of their time in thinking and writing when taking an essay exam. They spend most of their time reading and thinking when taking an objective exam.

4. The quality of an objective test is determined largely by the skill of the test constructor. The quality of an essay test is determined largely by the skill of the reader of the student answers.

5. An essay exam is relatively easy to prepare but relatively tedious and difficult to score accurately. A good objective exam is relatively tedious and difficult to prepare but relatively easy to score accurately.

6. An essay examination affords freedom for students to express their individuality in the answer given, and freedom for the scorer to be guided by individual preference in scoring the answer. An objective examination affords freedom for the test constructor to express personal knowledge and values but gives the student only the freedom to demonstrate achievement based on the proportion of correct answers given.

7. The student's task and the basis for judging the degree to which it has been accomplished are stated more clearly in objective tests than they are in essay tests.

8. An objective test permits, and occasionally encourages, guessing. An essay test permits, and occasionally encourages, bluffing.

9. The distribution of numerical scores obtained from an essay test can be controlled to a considerable degree by the grader; that from an objective test is determined almost entirely by the test.

Electronic Testing

With the widespread use of microcomputers, you now have the opportunity to administer tests electronically. Software packages are available that allow you to tell the computer which items to use, how to present and sequence items, how to provide feedback to students, how to score tests, what statistical analyses to perform, and what to include in a report of results.

A computer-based test can take the same items used on a pencil and paper test and put them in a format that responds to an individual's learning speed and style. It can also adjust the level of difficulty based on a student's previous responses.

Technology can do more, however, than minimize labor-intensive tasks associated with testing. Technology provides a means by which you can incorporate performance-based assessment into the distance learning environment. Traditionally, the separation of the teacher from the student severely limited the teacher's ability to assess performance. Computers, however, can record how students learn with feedback, students' thinking processes, and students' abilities to deal with realistic situations and problems. Video can record ongoing activities and explanations, how students' carry out tasks, perform experiments, and cooperate in a joint project.

Conclusion

Whether you use traditional paper and pencil tests or venture into the realm of electronic testing, you will need an item pool of available items on the same topic. These items should be aimed at different levels of difficulty and test different abilities. Perhaps you will want to use a combination of items—both multiple choice and essay.

For a typical test, it is desirable to have items that range in difficulty from easy to hard for the group for which the test is intended. (An easy item is one that at least 70% of the students can answer correctly; a hard one can be answered correctly by fewer than 30%.) However, the greatest concentration of items in a test is usually in the 30 to 70% correct range. It is important to keep in mind that items usually turn out to be more difficult for the students than you intend them to be.

Writing effective test questions is difficult and time-consuming. A good multiple-choice item takes considerably more time to write than an equally good essay item. Essay items take more time to score. Each type has clear advantages. Once you have decided on which type to use, you must see to it that each item is constructed properly.

With practice and experience, you will gain skill in writing effective test items. Your conscientious efforts will create a greater challenge and a more meaningful learning experience for students.

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Chapter Nine

Motivation Through Interaction and Media

by
David H. Dasenbrock, Ph.D.
Director of Development
McGraw-Hill Continuing Education Center

The Author

Dave received his Ph.D. in Science Education from Florida State University. He was first employed by McGraw-Hill Continuing Education Center, Washington, D.C. in 1969. He served as Dean of Instruction and Editor-in-Chief. He then served as Director of Education and Information Systems at the Quality Management Institute. He returned to McGraw-Hill as Director of Business Programs in March of 1986.

Dave is continuously developing new and exciting courses for McGraw-Hill. He has given several presentations on course development at NHSC Workshops.

Introduction

Not everyone is suited to being a home study student. It takes a special breed of person to study by correspondence, one who is self-motivated and has a subtle self-confidence and determination. But let's face it, after a few months of correspondence study, even the enthusiasm of the highly motivated student begins to wane.

Unlike courses which are presented in the classroom, home study students are **not** motivated by constant teacher initiated interaction. Most home study schools interact with their students only when the students request it, or to send a bill. Home study students are generally left alone to study at their own pace and provide their own motivation to complete their course.

However, it is possible, through the use of various design techniques, to build motivation **into** the instructional processes. In this chapter, we will look at a variety of techniques which can be used to make your course materials more motivational to the student.

Layout and Design

Probably the simplest motivational action which can be taken for most home study courses, particularly those which are a few years old, is to improve the layout and design. Entire books have been written on layout and design, and there are other chapters in this Handbook which deal with the subject.

However, because lesson layout and design does have a significant impact on student motivation and completion rates, it is important to review a few of the most important concepts.

Take advantage of desktop publishing using a PC. Use a typeface that is clear and legible. There are two basic categories of type: serif and sans-serif. Serif typefaces have little "feet" at the tops and bottoms of letters. Sans-serif typefaces do not have feet. Use serif type because it is easier to read. The serifs tend to bridge the gap between letters, making the copy look less formidable.

Always use upper and lower case characters, not all caps. Use italics or bold copy for emphasis, and don't use long sentences. Use white space (space where nothing is printed) to set off body copy, headlines, and illustrations. Above all, make sure the readability level is appropriate for your intended student. And finally, make sure the printing is of high quality on white paper of sufficient weight so that copy does not bleed through from the page underneath.

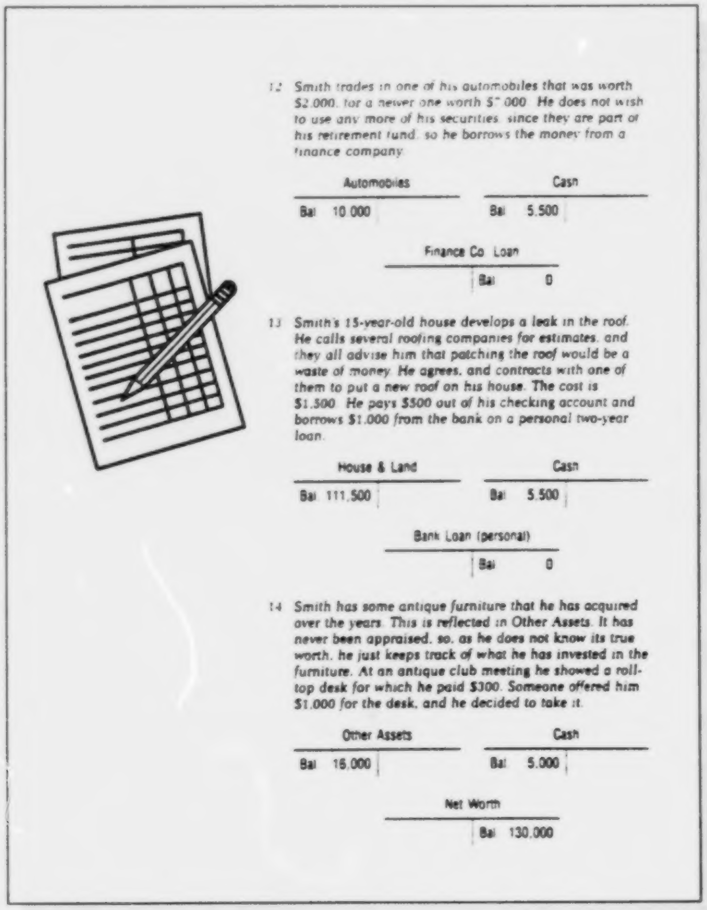
Illustrations

If anything can lull a student to sleep, it's page after page of printed text, especially if the topic is dull and uninteresting. Illustrations should be used to break up the monotony, stimulate learning, and increase the probability that the student will continue reading. A page with illustrations, regardless of what is contained in the text itself, looks more inviting and less formidable to the student.

Illustrations stimulate learning by offering the opportunity to explain visually the information provided in the written text. As the saying goes, "A picture is worth a thousand words." Often, it is almost impossible to explain in words certain concepts or procedures which can be easily illustrated.

The number of illustrations you should have depends on the subject material, but as a rule of thumb, try to put at least one illustration on every page. In some cases, this may be difficult to do. However, following the theory that illustrations break up the monotony, using simple graphics with some relationship to the subject material can accomplish the same thing. Figure 1 is an example of a simple graphic used in various forms to break up the text and give variety in what otherwise would be a dull accounting lesson.

Figure 1



12 Smith trades in one of his automobiles that was worth $2,000, for a newer one worth $7,000. He does not wish to use any more of his securities, since they are part of his retirement fund, so he borrows the money from a finance company.

Automobiles		Cash	
Bal 10,000		Bal 5,500	

Finance Co. Loan	
	Bal 0

13 Smith's 15-year-old house develops a leak in the roof. He calls several roofing companies for estimates, and they all advise him that patching the roof would be a waste of money. He agrees, and contracts with one of them to put a new roof on his house. The cost is $1,500. He pays $500 out of his checking account and borrows $1,000 from the bank on a personal two-year loan.

House & Land		Cash	
Bal 111,500		Bal 5,500	

Bank Loan (personal)	
	Bal 0

14 Smith has some antique furniture that he has acquired over the years. This is reflected in Other Assets. It has never been appraised, so, as he does not know its true worth, he just keeps track of what he has invested in the furniture. At an antique club meeting he showed a roll-top desk for which he paid $300. Someone offered him $1,000 for the desk, and he decided to take it.

Other Assets		Cash	
Bal 16,000		Bal 5,000	

Net Worth	
	Bal 130,000

Example of how a simple graphic can be used.

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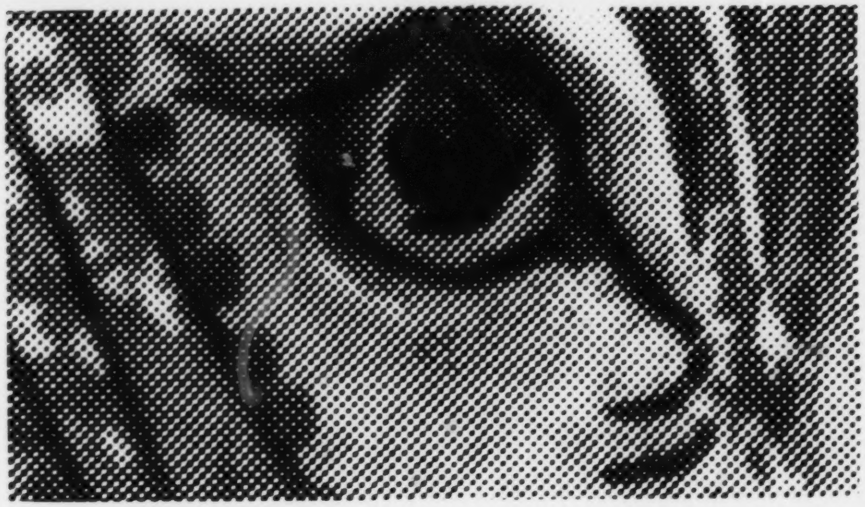
There are two basic types of illustrations: line art and photographs. Line art consists of illustrations which contain areas that are either black or white, such as line graphs or circuit diagrams. As a result, line art "looks" the same as text, and may be easily reproduced on a copy machine. Some copy machines do have trouble reproducing large black areas however, so beware. Commercial printers should have no problem with large solid black areas.

A black and white photograph, on the other hand, although it may have areas that are solid black or white, usually consists of continuous tones of gray. As a result, photographs usually do not reproduce well. Photographs are usually converted to halftones before they are printed. In the halftone process, a photograph is converted into a series of dots, with the dark areas containing bigger dots than the gray or white areas which contain smaller dots, spaced farther apart, or none at all.

If you are not familiar with the process, look at Figure 2. Figure 2 is an enlargement of a small area on a halftone. Look at any photograph in a newspaper through a magnifying glass and you will see a similar dot pattern.

Figure 2



Close-up of a halftone.

For good quality reproduction, converting a photograph to a half tone should be done by a printer. The process is expensive, and the cost varies, so shop around. Most printers charge in the $8 -

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$12 range. If your text has a lot of halftones, you may be able to work a deal with a printer and get a package price.

The advent of desktop publishing has brought about a low cost method of converting photographs to halftones. Of course, with all computer applications, there is an initial investment in software and hardware. First, you will need a scanner to scan your image into your computer memory. There are color and grey-scale scanners. Unless you intend to print in color, a grey-scale scanner is sufficient. A grey-scale scanner will convert a photograph into shades of grey as it reads the photo into your computer's memory. Once in memory, most of the more expensive desktop publishing programs have utilities which will convert the grey-scale image into a series of dots, like a halftone, which can be easily reproduced by a printer.

Review Questions

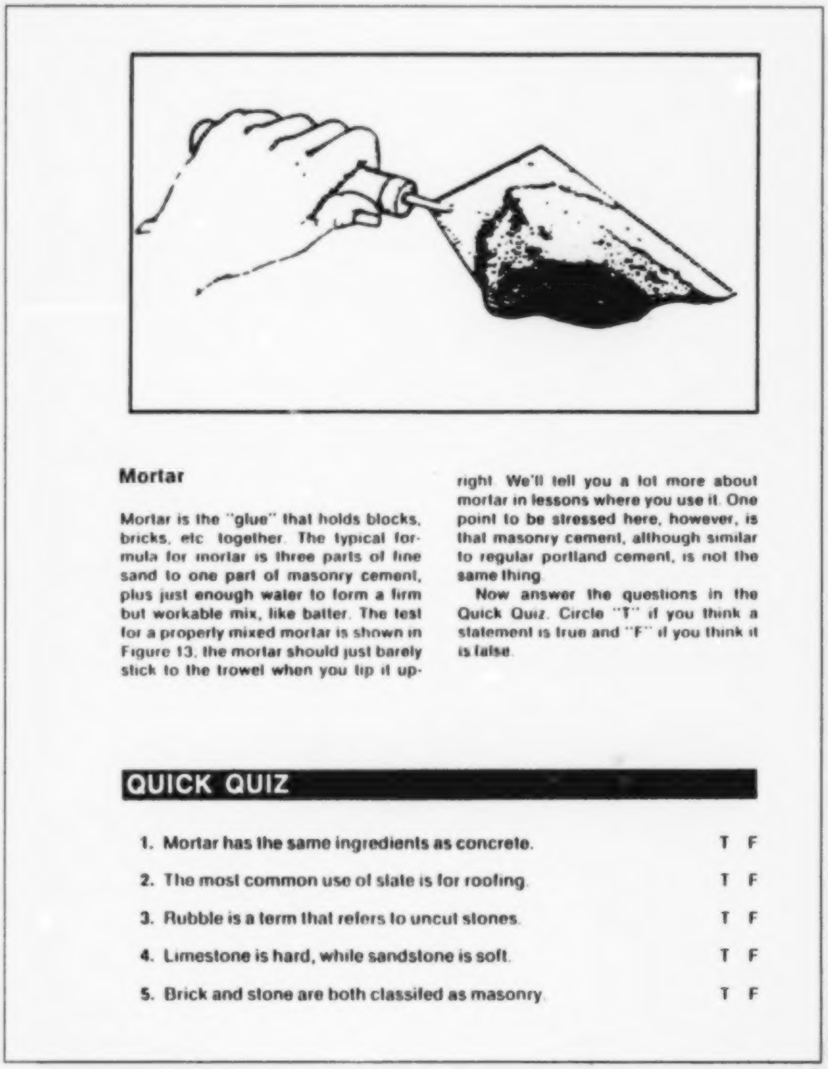
Another very effective way to break up the text and stimulate learning is through the use of review questions. Often referred to as self-test or self-check questions, review questions serve several valuable purposes.

First, like illustrations, they break up the monotony of the text. Through the use of simple graphics, different type faces, or different line lengths, such as shown in Figure 3, the student is forced to stop for a moment. If the reader happens to be daydreaming, or reading with little comprehension of the subject matter, the questions serve as a jolt back to reality.

The questions can also be used to force the student to interact with the text, especially if space to answer the questions is provided. In the example, the student is told to circle the correct answer in the lesson. If the student does not know the correct answer, the student is forced to review the previous material. A review is particularly helpful if the concepts are difficult or if the student did not really understand the material upon the first reading. Answering review questions stimulates the learning process.

In addition, review questions are also motivational. Answering correctly reinforces the concepts learned and gives the student a sense of accomplishment. Since the home study student does not have a teacher standing over his or her shoulder, correctly answered questions provide the student with a sense of satisfaction, much like praise from a teacher.

Figure 3



Mortar

Mortar is the "glue" that holds blocks, bricks, etc. together. The typical formula for mortar is three parts of fine sand to one part of masonry cement, plus just enough water to form a firm but workable mix, like batter. The test for a properly mixed mortar is shown in Figure 13; the mortar should just barely stick to the trowel when you tip it upright. We'll tell you a lot more about mortar in lessons where you use it. One point to be stressed here, however, is that masonry cement, although similar to regular portland cement, is not the same thing.

Now answer the questions in the Quick Quiz. Circle "T" if you think a statement is true and "F" if you think it is false.

QUICK QUIZ

1. Mortar has the same ingredients as concrete. T F
2. The most common use of slate is for roofing. T F
3. Rubble is a term that refers to uncut stones. T F
4. Limestone is hard, while sandstone is soft. T F
5. Brick and stone are both classifed as masonry. T F

Graphics breakup the monotony of the text

Ideally, review questions should be used at the end of each major topic in the typical home study lesson. This means there may be several sets of review questions in a lesson. Of course, the answers to the questions should be provided. Always try to place the answers so that the student cannot easily see the correct answer and the questions at the same time. This means placing the answers at the end of the lesson or perhaps printing them upside down on the same page as the questions.

Workbooks

An alternative to providing review questions within the lesson text is to provide them in a separate workbook. One big advantage to a workbook is that a student is more apt to complete review questions and exercises if he or she is encouraged to write the answers in the workbook. Due to years of classroom conditioning, students are reluctant to write on their lesson materials.

Another advantage is in the perceived value of the training to the student. A separate workbook makes the student think he or she is getting more for the money. The more materials provided, the greater the perceived worth on the part of the student.

Workbooks also allow you to provide areas for the student to actually work out solutions to problems, draw sketches, make flowcharts, etc. The workbook provides an area for the student to keep all of his or her work to refer to later. Solutions or sketches will not get thrown away.

Audio Cassettes

The use of audio cassettes brings an entire new dimension to a home study course, the appeal to another sense—hearing. Not all subject matter is conducive to the use of audio cassettes, but you may be surprised to find that there are a variety of alternatives to the monotone voice heard on many instructional tapes.

Begin by determining where in your program the use of audio is a useful alternative to the written text. If the subject you are teaching does not readily lend itself to an audio presentation, then don't use it! Never stick in an audio cassette simply for the sake of using audio. There should always be a learning-related reason for using audio.

An obvious use of audio is when the voice or voices on the tape has some significance to the student. For example, a famous writer could explain his or her techniques or an athlete and a coach could explain one of the fundamentals of a sport. Not all audio has to be the "real" thing. For example, scripted simulations of conversations between individuals can be used. Sound effects can also have impact to the listener.

If you are going to used scripted audio, there are several basic guidelines that you should follow. First, always work from a written script. Never go to a recording session with the idea of throwing out a topic for discussion and expecting the narrators to ad-lib—it won't work. Also, a single voice rambling on a cassette will quickly lose the interest of the listener. Make sure the narrator changes pitch and emphasis while reading the script.

Second, always make sure the tape has an instructional objective. Pick out a specific instructional objective, and develop a script towards that goal.

Always use professional recording equipment in a studio setting if possible. Never record an audio presentation using a small battery operated tape recorder. Nothing is worse than a student receiving an instructional audio cassette that sounds as though the person talking was in a tin can or in a small cubicle with a lot of background noise. Using a professional studio is essential if you are planning to use sound effects or music.

When writing the script, keep in mind that conversational English differs from the written word. Write the script using contractions and other expressions that are common when speaking. One of the best methods in the development of a script is to read it aloud to another individual when it is finished. Determine where what you read is different from what you would normally say. Also, don't get too technical. Technical explanations are best if presented in writing.

If at all possible, use professional narrators. Using people at your school always seems to come across as an amateur production. Select your narrator as carefully as you would a new employee. Most studios can supply tapes which will allow you to listen to several voices and pick the one best suits your situation.

Some studios may require you to use union talent, which can be extremely expensive. If at all possible, work out a price schedule with the studio and the talent before you begin recording. Often, you can pay talent a set amount for the first hour or two, and then so much for each additional quarter hour. Studio costs are usually by the hour.

Always make sure the narrator receives the script well in advance of the recording date so that he or she can come to the studio prepared. This is especially important if the script is technical in nature and if the narrator is unfamiliar with the proper pronunciation of terms.

Consider using two voices on your tapes. Often, two narrators with distinctly different voices can be very effective. Such presentations are more lively and interesting and get away from the single voice, which often drones on in a monotone fashion.

If you do use a professional recording studio, shop around for prices. You may find big variations. Make sure you get confirmation of recording dates, prices, and delivery times. In most cases, the time for editing or adding sound effects or music must be added to the studio time.

You will also have to get prices for the cost of duplication of your cassettes once the master is made. Usually, you can find a company which specializes in cassette duplication and will do it much more economically than a recording studio. Also, find out if there are subcontractors who will print the cassette labels for you or if you must supply them.

One final point: keep your audio presentations short. Never have a program which lasts over 30 minutes. Try to keep your programs in the 12-15 minute range. Programs in this range will hold the student's attention for the entire presentation.

Audio-Visual Presentations

One step up from the simple audio presentation is the audio-visual presentation. As the name indicates, this type of presentation integrates a set of visuals with audio. The visuals can be filmstrips, slides, photos, or even the printed page. Each format has its own advantages and disadvantages.

The big advantage to using slides is that they can be duplicated in color, which would make them very appropriate for some areas, such as art courses. Also, they can be projected which makes them suitable for use by groups or allows the student to magnify the slide through projection for greater amplification and precise viewing of the visual. The big disadvantage is cost. Color slides are costly to reproduce. In addition, the student who does not already have a slide projector must be willing to buy one or some other type of viewing device.

Filmstrips are a lower cost alternative to slides, but require a special projector. From a practical standpoint, there is very little most students can do with a filmstrip projector once the course is finished.

The most economical audio-visual presentation uses a cassette and the printed page. The student needs no special equipment to look at the visuals. They can be printed in a booklet or a special flip-chart. The student simply follows along in the booklet and turns pages when told to do so.

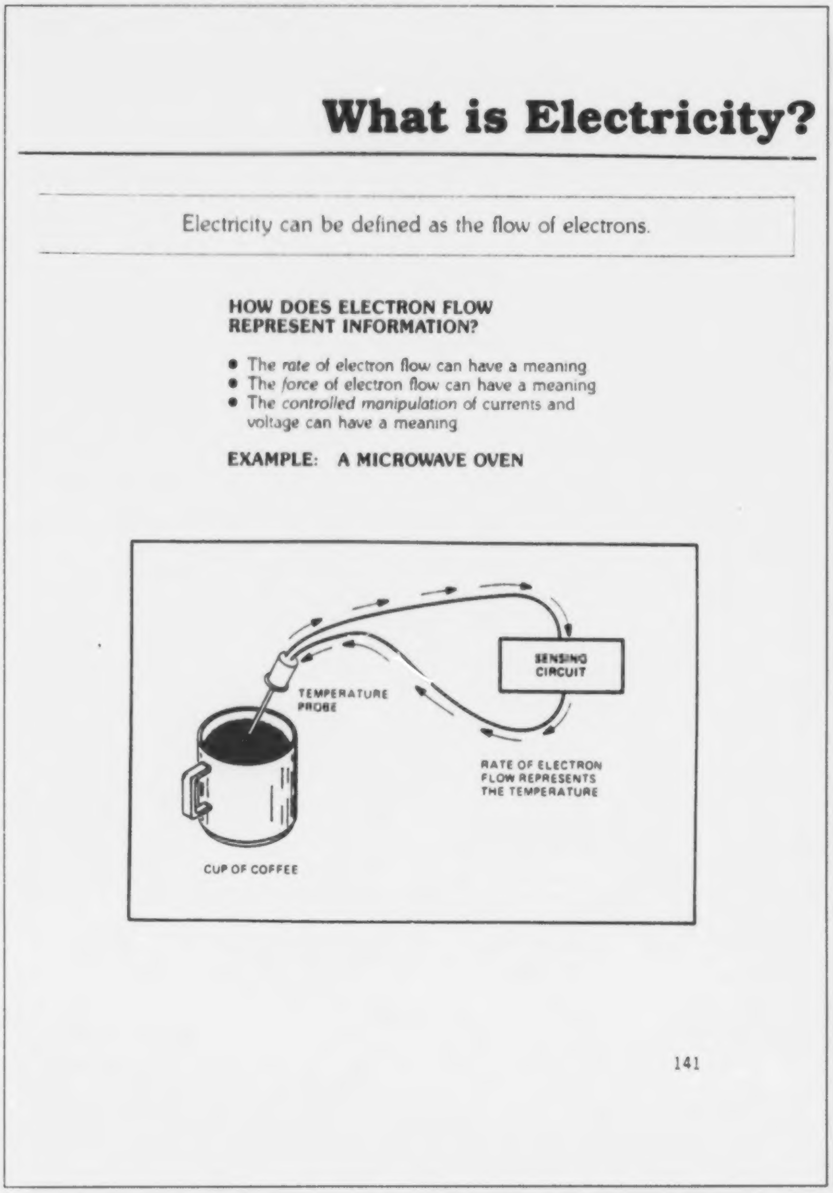
Each visual represents a "frame." Determine the overall learning objective and then identify the individual frames which are necessary to achieve the objective. Write each of the frames on a card and arrange the cards in the best logical order of presentation. A frame need not be an illustration or photograph. Frames can also just be key words or phrases.

If an outside vendor is going to be responsible for the final preparation of the visuals, make sure you are as explicit as possible as to what you want. Work as closely as possible with the people who are preparing the visuals. Frequently, they will suggest ways to improve the presentation. Listen to them. They are probably more accustomed to thinking visually than you are. Make sure the visuals are professionally done. Don't rely on amateur photographers or use rough sketches in this type of presentation.

However, before you begin final preparation of the visuals, make sure you have the script written. Use the same guidelines mentioned previously under Audio Cassettes. Always plan ahead. A 30-minute presentation that averages 12 seconds per frame will consist of 150 frames, which, if you use slides, is over the capacity of most projectors.

Figure 4 is a very simple frame showing an electronic circuit. In this particular frame, the student was instructed to trace the current in the circuit shown as the instructor explained the concepts on the tape. A presentation of this type allows the student to concentrate on the visual, and not be distracted by constantly looking back and forth from the text to the illustration.

Figure 4



What is Electricity?

Electricity can be defined as the flow of electrons.

HOW DOES ELECTRON FLOW REPRESENT INFORMATION?

- The *rate* of electron flow can have a meaning
- The *force* of electron flow can have a meaning
- The *controlled manipulation* of currents and voltage can have a meaning

EXAMPLE: A MICROWAVE OVEN

SENSING CIRCUIT
TEMPERATURE PROBE
RATE OF ELECTRON FLOW REPRESENTS THE TEMPERATURE
CUP OF COFFEE

141

This layout allows the student to concentrate on the visual and not have to look back and forth from the text to the illustrations.

Video Cassettes

Video instruction on cassette is usually outside the realm of most home study courses because of the production costs involved. If done by professionals, a rule of thumb is to budget not less than

$1,000 per instructional minute. Thus, a 30 minute video tape would cost at least $30,000 to produce. The cost of duplication and the tape itself must be added to this figure.

A low cost alternative is to produce a video cassette yourself. The biggest problem with doing it yourself is the difficulty involved in recording and editing to make it look like a professional production. The following tips to follow for video presentations:

- Begin by writing down the instructional objective. Then develop the instructional outline, just as you would for any other instructional sequence. Once you have the outline, you should be able to determine the major shot sequences you will need for the project.

- Next, develop a storyboard. A storyboard is very similar to sequencing the frames for an audio-visual presentation. It consists of a series of frames laid out in a grid-like pattern. Each frame in the storyboard represents a shot, which could be several seconds or even minutes of tape. Don't worry about your artistic ability, stick people and box houses are fine.

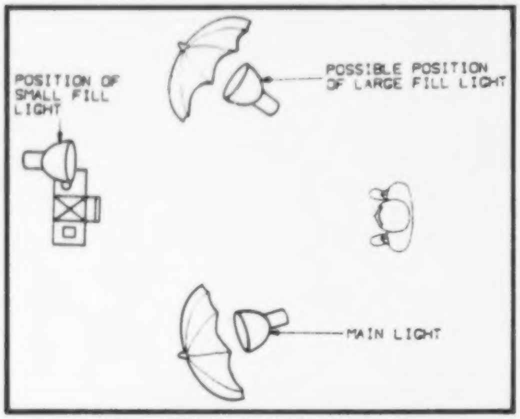
- Once the storyboard is complete, go back and describe each shot in as much detail as possible. Include the purpose of the shot, what specific props or equipment are needed, the setting (lab, office, outdoors, etc.), special lighting or sound problems, and the camera angle.

- Next, write the script. As with audio cassettes, make sure the script is written in a conversational style. Develop the script frame by frame, according to your storyboard. Remember to plan for action in each shot. Something should be moving in the majority of the shots. If you are unable to do this, then consider using an audio-visual presentation instead of video. Motion can be in the form of camera movement, or movement of the subject you are filming. Include in the script as much direction as possible to indicate what is supposed to be happening.

- It is best to use professional talent. Make sure any talent gets the script well in advance. When it comes time to shoot the program, plan a shooting schedule. A shooting schedule allows you to plan for when the talent is needed, so you will not have to pay them for just sitting around.

- Try a dry run with your own staff first. Make sure the lighting and sound are adequate. If not, most large cities have rental outlets where you can get extra lights or microphones. As a word of caution, for most productions, existing room lighting is not adequate. Figure 5 illustrates a typical lighting setup.

Figure 5


POSITION OF SMALL FILL LIGHT
POSSIBLE POSITION OF LARGE FILL LIGHT
MAIN LIGHT

A large fill light should be placed off to the side opposite the main light. A small fill light should be placed above and slightly in front of the camera.

Typical lighting setup.

In addition, a single microphone, mounted on the camera, is not sufficient, especially if the action is taking place some distance from the camera and includes several participants. Never, unless it is absolutely necessary, use a hand-held camera. Always mount the camera on a tripod and make sure the camera movements are slow and smooth.

- Plan for editing. Unless you have done everything exactly right, which is practically impossible, you will not shoot a tape you can just duplicate. Minor editing can be done from one VCR to another, but it is not easy. If you plan to do a lot of video production, it may pay to invest in VCR editing equipment. Special VCR's which allow editing frame by frame can be purchased for under $2,000. Also, microcomputer hardware and software is now available which allows you to computerize the editing on a frame by frame basis. Some large cities have studios you can rent which contain professional editing and sound-dubbing equipment.

Training Kits and Equipment

Nothing provides greater motivation to students than "hands-on" training. Many schools provide this type of training through the use of training kits or projects, which supplement the instructional lessons. Kits or projects may include tools, equipment, instruments, components, forms, accessories, cassettes, or other types of training materials.

Training kits are usually designed to teach skills that cannot be learned solely by reading a book. The use of training kits in a home study course provides an opportunity to "learn by doing." Persons training for such technical areas as drafting, air conditioning, automotive repair, and locksmithing **cannot** perform their jobs properly without being skilled in the use of the tools of the trade.

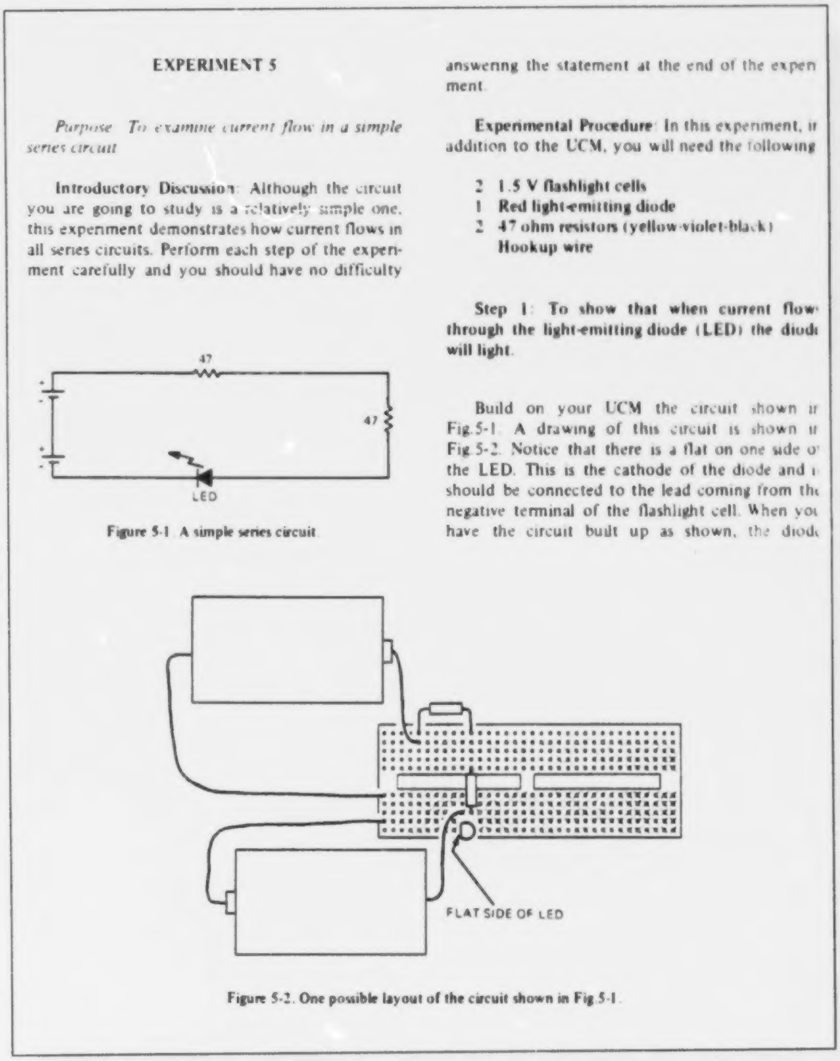
Kits also reinforce the text material. A theory or technique can be learned more quickly and retained longer if the textbook is reinforced later by actual experiments or practice. Training kits or projects allow the student the opportunity to put theory into practice. Often, you can provide step-by-step instructions so that the student does not have to be afraid of making a mistake, such as shown in Figure 6.

Nothing beats a student's desire to hold and work with tools and equipment. With strategic placement of training kits in a course of study, students can be encouraged to continue their training and study on a regular basis, especially if you remind them of what they are about to get in the next training kit.

Of course, training kits do have drawbacks. Kits cost money. Kits also increase the complexity of the development and servicing of a course. Kit components must be ordered, stocked, packed, and shipped and even "replaced." The cost of keeping training kits in inventory for immediate shipment to students can be substantial.

If you decide to use training kits, make sure they have educational value. Don't provide tools or equipment simply as an attempt to put hardware in a course. The training kits should provide the student with experiments to perform, tests to run, data to collect, stories to write, or some other type of interaction with the materials. Make the kits meaningful. Do not just provide busy work for the student to perform.

Figure 6


47
47
LED
FLAT SIDE OF LED

EXPERIMENT 5

Purpose To examine current flow in a simple series circuit

Introductory Discussion: Although the circuit you are going to study is a relatively simple one, this experiment demonstrates how current flows in all series circuits. Perform each step of the experiment carefully and you should have no difficulty answering the statement at the end of the experiment.

Experimental Procedure: In this experiment, i addition to the UCM, you will need the following

2 1.5 V flashlight cells
1 Red light-emitting diode
2 47 ohm resistors (yellow-violet-black)
Hookup wire

Step 1: To show that when current flow through the light-emitting diode (LED) the diod will light.

Build on your UCM the circuit shown i Fig.5-1. A drawing of this circuit is shown i Fig.5-2. Notice that there is a flat on one side o the LED. This is the cathode of the diode and i should be connected to the lead coming from th negative terminal of the flashlight cell. When yo have the circuit built up as shown, the diod

Figure 5-1. A simple series circuit.

Figure 5-2. One possible layout of the circuit shown in Fig.5-1.

Step-by-step instructions help a student to learn.

Multimedia

As this Handbook is being published, multimedia is the "buzz word" in training. Multimedia refers to the use of a personal computer or PC as the vehicle to provide training.

Multimedia presentations contain all of the stimulation and motivation of audio, full motion video, graphics, animation, and text in an interactive environment.

A multimedia PC should contain a 386 or better processor, a VGA color monitor, floppy disk drive, at least a 40 Meg hard drive, a mouse, sound card, and CD-ROM drive.

Although multimedia presentations may provide more motivation than a simple text, they are much more costly to develop and require the student to have an appropriate computer on which to run the presentation. Also, because they are interactive, wherein the student often determines the instructional path based on specific criteria evaluated by the program itself, it is very difficult to associate a development cost to multimedia programs. However, linear multimedia presentations (those which use a predetermined straight path) may cost as much as $1,500 per instructional minute to produce if done professionally.

The steps in developing a multimedia presentation combine all of the elements of the other media described earlier, plus determination of possible student paths and interactions. The preliminary design phase is the most critical. In it you must carefully set out your instructional objectives, determine criteria on which to judge student performance, lay out alternate paths based on performance, and analyze the best way to deliver each of the instructional elements (audio, video, graphics, etc.).

Unlike simple audio, audio-visual, or video programs, careful documentation of a multimedia program is critical. You must remember that it is a computer driven program, and is really computer software. As such, user's manuals or technical references are essential parts of the program.

Conclusion

Low course completion and graduation rates have been a challenge to home study educators for over a century. One of the most effective ways to improve completion rates is to build motivation into the study materials themselves. In this chapter, as well as in other chapters, we have variety of practical techniques to provide motivation at our disposal. It is up to us to apply them.

Chapter Ten

Designing a Home Study Course

by
Dennis Foltz
Vice President of Education and Operations
Gemological Institute of America

The Author

Dennis Foltz, Vice President of Education and Operations at the Gemological Institute of America, Santa Monica, California, and a member of the NHSC Board of Trustees, has been involved in home study for more than 15 years.

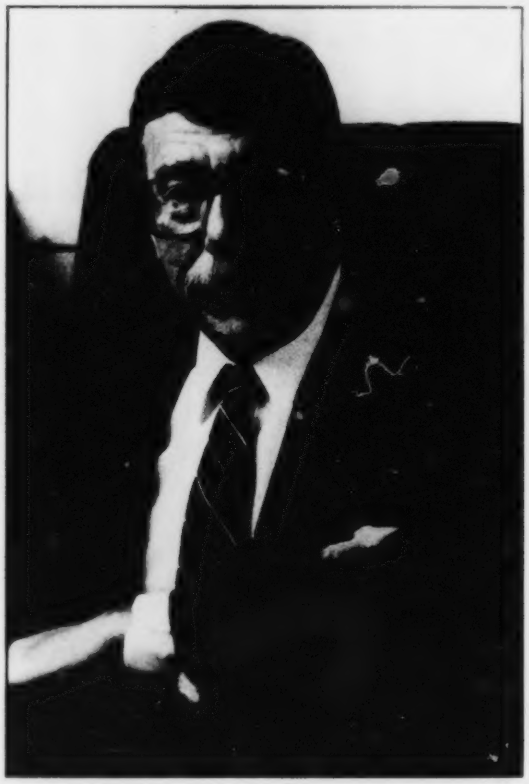
Dennis has lectured at numerous NHSC Conferences and Workshops and has written several articles for NHSC publications. He was awarded the NHSC Distinguished Recognition Award in 1988 for his outstanding work on special projects. Dennis has also served as an Evaluator on many Accrediting Commission on-site evaluations.

Introduction

Too many home study providers think of the "design" stage as coming near the end of the course development process. The course has been written and edited, and all the illustrations have been created or collected. Now the design process can begin, right?

Wrong. Don't confuse "design" with "layout." Course design begins when a course is first conceived and planned. It starts with analyzing the students for whom the course is intended, and defining the educational objectives you are trying to achieve. It includes an estimate of the size of your market, and the price you intend to charge. And it requires a firm idea of how the course will be produced and printed (and by whom), a clear plan for shipping it, and a program in place to service it.

In other words, course design is a "holistic process" that includes all the things that make a home study course both educationally effective and commercially successful. Obviously, this starts with the technical accuracy of the instructional material. But it is equally important to think about how students can best learn that material, how you can best deliver it to them, and how best to service them.



Dennis Foltz. This portrait was reproduced from a "PMT" (positive mezzo tint) at a pre-press cost of about $5. A halftone negative would have cost about $15 to produce, and perhaps $10 in stripping costs. If the picture were in four-color, the pre-press costs would be about $100, and stripping about $30. Costs are based on 1993 job shop rates in the Los Angeles metropolitan area.

A home study course, then, is not simply a bunch of lessons with examinations to take or projects to complete. It is a complex information delivery system, intended to meet a number of goals. Unless it is designed as a system, as a total package, it will not accomplish what you, and your students, want it to do.

Where it All Begins

Let's look at some of the factors that affect course design. Most important are the kinds of students you are targeting. Here are some of the questions you should ask yourself:

- What age group can you expect to enroll? This is important, because reading skills have been declining in recent years—

which means that the younger your prospect pool, the lower their reading skills are likely to be. And these skills impact literally every aspect of your course: the language level, the editorial style, the number and length of your lessons, the estimated time of completion, and the physical layout of the materials on the page.

- How much education have these prospective students had? No matter how well they read, learning is a different matter. Learning is largely a matter of practice, learning from the printed page even more so. Are your students likely to be comfortable with a page of solid text, unbroken by illustrations or other graphics? Maybe. But, in general, only very sophisticated readers can handle that kind of presentation.

- How affluent are they, and what does your course represent to them in terms of a career, an income, a lifestyle? Course design affects cost; cost affects price. You want to create a course that is profitable, a course that your targeted market can afford (and will buy, which is not quite the same thing).

- How do you plan to get your course materials into the hands of your students? This is equally important. Are you planning to ship everything at once? In two or three shipments? One lesson at a time? Will your course include charts, kits, tools, special manuals, instruments? These factors are all elements of the course design.

Getting Started

Consider the following scenario as a kind of "case study." Suppose you are either the owner of a relatively small school with two successful home study courses in the area of automotive repair, or an experienced marine mechanic with your own business, planning your first venture in creating a home study course. In either case, you want to develop a course dealing with installing and maintaining marine engines.

In the first case, because of your experience training students for the auto repair industry, you have solid data on those students, past and present. You assume you will attract much the same sort of prospect to your new program.

In the second case, you do not have the fairly systematic data that comes with having run a school, but you have been around the business a long time. You have hired and fired a lot of mechanics, and interviewed even more. In effect, you have been conducting "surveys" of the employment pool most of your working life.

In either instance, you have also done some informal research talking with the owners of marine engine dealerships and repair shops, so you have a good sense of what your prospects are likely to be. Here, then, is a profile of what your prospective students will probably be like:

- Most will be males, high school graduates in the 22 to 38 year old age group.
- Most are already working, or have worked, in a field involving mechanical skills. They can use basic automotive hand tools, they maintain their own cars, and they enjoy working with their hands.
- Many own, or have owned, small power boats.
- They read sports pages regularly, and sports and automotive magazines occasionally (but they do not subscribe). On the other hand, they watch a lot of television.
- Most have not had much training in math, and no experience reading engineering drawings.
- Most have had no engineering theory, and no experience with sophisticated test equipment.

All this information is useful—indeed, it is essential. It should already be on hand when you develop the first draft of your new course. It is important in relation to your writing style and the reading level you want to maintain. And it will affect your marketing strategy, your pricing, and your plans for servicing the course.

But it is also information you must consider in design, in the largest sense of that term. You need an overall concept that gets your students involved in the nuts-and-bolts subject matter as soon as possible. But you also have to find a way to give them enough math, enough hydrodynamics, enough basic engineering and basic electricity to do what they will have to do.

Furthermore, you have to do this without discouraging them. You want to produce successful graduates, and that means minimizing non-starts and drop-outs. Thus, one of the first decisions in the design process is what material to present when, in what order, and how thoroughly.

WEATHER ACROSS THE USA
FOUR-DAY HIGHLIGHTS
Snow hits Montana, Wyoming
Fall's kickoff: A winter storm
AREA WEATHER CLOSE-UP

Complex, highly detailed graphics have a major impact on page size and on layout. This page from USA Today *is designed for a full-size daily newspaper (usually 13 1/2" x 22 3/4"). If would not be very effective on an 8 1/2" x 11" page, and unintelligible on 5 1/2" x 8 1/2" page.*

The Forest and the Trees

It helps if you have a good outline, and a clear idea of all the elements that will make up your course. Otherwise, you may settle on what seems a plausible scheme, only to find, later in the process, that some of the things you want to do are very difficult to accommodate within the parameters you first laid down.

Thus, for example, our imaginary marine engine course will probably call for a good many charts and reference materials—propeller selection charts, strength of materials tables, boat plans, whatever.

First of all, how sure are you that your prospective students know how to use materials of this sort? Can they read an x-y graph? Can they extrapolate full-size dimensions from a scale drawing? You will have to introduce some basics at the appropriate point, before you can expect them to use this material effectively. (We will get back to effective presentation order and the problems of non-

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starts and completion rates a little later on.)

Ultimately, the need for charts and graphs will affect your layout decisions, too. If you expect to present a lot of information this way, you will find it easier to do it in, say, an 8 1/2" x 11" format, rather than 5" x 7". If you have already laid out a half-dozen lessons in a 5" x 7" format, you are either going to have to find a way to compress your charts and drawings, or complicate your entire production process—and, later, your warehousing, packaging, and shipping with a variety of odd-sized materials.

You will soon discover that all these decisions are interdependent. The need to accommodate your charts and drawings is a pretty sound reason for going to an 8 1/2" x 11" page size. On the other hand, an 8 1/2" x 11" page is pretty big for educational material. Typeset, in a typical, normal size typeface, with normal margins and spacing, an 8 1/2" x 11" page might contain 1200 or 1300 words. That's a lot of text for a student audience we have already identified as inexperienced and unenthusiastic readers.

Furthermore, even with ample margins, a line of text on an 8 1/2" x 11" page might run 5 1/2 or 6 inches, which is far too long. Research has shown that, even for experienced readers, a 3 to 4 inch line is easier to read. This is why most magazines lay out their pages in two or three columns. What works for magazines will work for home study courses, too.

In modern graphic design, the convention of setting body type "flush left-ragged right" (instead of "justified," which means set flush on both the left- and right-hand edges) is increasingly popular. This "ragged right" format, as it is called, is actually a little easier to read, especially for inexperienced readers. It is also about 15 percent cheaper to set.

Even the choice of typefaces for various purposes requires careful thought, as we'll see next.

Sorry, You're Not My Type

The rise of the personal computer has had an enormous impact on the typesetting industry—so much so that, today, typesetting is in about the same position as the buggy and harness business was in, say, 1920. Most typesetting is now down as part of the layout process, on any one of several desktop publishing systems. (As a

And An Order of Info on the Side

To someone in newspaper or magazine publishing, what you are reading right now is called a "sidebar." Sidebars are short discussions separated from the main text (a magazine editor would say it has been "broken out"). Usually they are boxed; often they are "screened," which means over-printing in gray, or in a second color.

Sidebars are an ideal place to introduce background material you might want to break out a short explanation of how to read a graph, with an illustration. That way, the background material does not interrupt the flow of your main discussion. Because it is self-contained, it is convenient for reference or review. Readers for whom the information is old hat can skip it.

Careful placement is essential with this sort of sidebar. A sidebar on using an engineering rule won't do much good if it falls three pages after the student is asked to do it.

Sidebars are an excellent way of presenting motivational material, too. Success stories, cautionary anecdotes, safety tips, short scientific or historical background pieces can enrich and enliven any course. Here placement is much less critical. You can even develop a file of such items, and use them more or less at random to solve various kinds of layout problems.

People like to read about other people. Even though students choose home study courses largely because of their interest in a particular vocational field, they enjoy—and respond to—short biographies of people to whom they can relate. Leaders and innovators in whatever field your course covers, success stories, anecdotes about famous people that illustrate the benefits of study—all are grist for your mill.

You can find biographical information on such people in the various regional and topical editions of *Who's Who*, in encyclopedias, trade magazines, or in any library. In the case of living subjects, you can often call and do a short telephone interview. Very few people object to having their accomplishments celebrated in this fashion.

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matter of fact, unless your typographic needs are fairly complex, it can be done on most of the major word-processing systems.)

This does not mean that you should do it yourself. One of the by-products of desktop publishing is a lot of really bad typography and graphic design, done by people who, while they may have mastered some software, know little or nothing about type and layout. Unless you are experienced and knowledgeable, hire a graphic artist and have it done right.

Typefaces all have evocative names: Tiffany, Souvenir, Gothic, Cheltenham—the list goes on and on. Even the most modest desktop publishing and word processing programs come with a dozen or more bundled into the basic software. You can buy others to add to your basic set. It is all too easy to be tempted, like a kid in a candy store, by the very size of the selection.

But beware: The typeface you choose will to a great extent determine the overall readability of your course. Typefaces have different personalities and create different impressions. That is why a ballet program has a different aura than a circus poster. You are producing educational material. You want your courses to be dignified without being forbidding; you want them to be attractive, and above all you want them to be readable.

Your next decision involves the nature of the material you send to your printer—the "output," as it's called today. If you feel your material calls for a really elegant look, you can send your electronic files to a service bureau—either physically send them your disks, or (and this is generally faster and cheaper) transmit the file via telephone modem—and have the output done photographically. Otherwise you can use the output from any good laser printer. (And today, almost any laser printer is "good" enough.) There will be a slight, marginally perceptible difference in appearance: Phototype, or "Linotronic," as it's called, is slightly crisper and denser than laser output.

This is going to add to your costs, not just for the photo output itself, but down the line, in printing: If you want to maintain the quality you paid for to get the photo output, you're going to have to use a good quality coated paper when you print. The dollar difference is ultimately going to depend on the size of your print run (paper is usually not the major cost factor in printing).

Ideas are Where You Find Them

As far as layout is concerned, you can learn a lot by looking at whatever magazines you think your potential prospects are likely to read. (Think about where you might want to advertise your courses, for example.) Magazines pay art directors a lot of money to keep their readers turning pages. With a little analysis, you can have the benefit of their expertise for the price of a copy or two.

What you are looking for is general principles, not specific designs. You will notice, for example, that except for a few magazines that fancy themselves as real intellectual heavyweights (*Atlantic Monthly*, say), you seldom see a page of unbroken type. Always there is something to break the page into smaller, friendlier segments. It may be spot art, a subhead, or perhaps a "pull quote" (a pull quote is a pithy line reset in a larger typeface).

A pull quote is a pithy line reset in a larger typeface.

"Okay," you say, "I'll use magazines as my models for my marine engine course. Most of my prospective students probably read *Playboy*. Is that a good model to follow?"

Not really, although *Playboy* is an extremely well-designed publication. But it is likely that your preliminary planning and research found the market for marine mechanics to be smaller than that in the large and widespread autorepair industry. This means a smaller prospect pool and fewer enrollments. To make your new course profitable, production costs will have to be controlled very carefully. Many schools can produce and print an entire course for substantially less than the Hefners spend on just one of their famous centerfolds.

This brings up the key issue of production costs. These, too, must be part of a well-designed home study course.

Affordable Quality

If you are planning to produce limited quantities, there are other ways to reproduce course materials besides printing. But for larger quantities, printing remains the most economical way to go.

It is true that smaller enrollments mean smaller print runs, but that is not the first place to look to keep costs down. The most significant production costs come before the presses ever start rolling. Here are some of the areas where costs can skyrocket, and how to keep them where they belong:

- **Illustrations**

Professional photography is expensive; amateur photography is, well, amateurish. If you use photographs, get the best originals you possibly can, but actually, photography may not be the best medium to use for teaching. Line drawings are often much clearer and much more effective, especially for technical illustrations. Furthermore, freelance artists generally do piecework while photographers usually work by the day, with a half-day minimum rate.

Whether you opt for photography or line drawings, or both, be sure to work with artists and photographers who are accustomed to preparing work for offset reproduction (all modern printing is done by the so-called "offset" process). You may have a friend or relative who draws or paints, or takes interesting pictures; if you are really cost-conscious, you may even be tempted to foray out yourself with a handheld 35mm camera and a few rolls of film. But there are a lot of tricks involved in drawing or shooting for print. Remember, the printed version will never be any better than your original. It is important to start with the best image you can get.

It is not always necessary to create your own illustrations. Sometimes you can buy what you need from stock houses, which have millions of images in their archives. You can, for example, tell them you want pictures of yacht harbors at sunset, or boatyards—or shipwrecks, for that matter. They will send you a selection to choose from.

Design for Learning

A freelance graphic designer can often help solve the problem of creating an effective design concept for your course.

Do you have to add graphics to the many hats you already wear as a home study manager? No, and unless you have some experience at it—and a flair for it—it would be foolish to try. Graphics is a visual field, but there is more to it than meets the eye.

One possibility is to hire a graphic designer to create a design concept for you. This does not necessarily mean a permanent addition to your payroll; many graphic designers work as freelancers, on a project-by-project basis.

Creating a design concept does not mean laying your course out page by page—you can hire paste-up artists for that. What you want first is a basic page layout, a schema that will handle your charts and graphs and other such materials, and perhaps a cover design.

A good designer will do even more: Educational or motivational messages can be communicated through the layout itself. Here are some examples:

- Using engineering grids as a background for technical illustrations—even when, strictly speaking, they are not necessary—reinforces an image of high-tech expertise.
- Standing heads for any sections that recur from lesson to lesson give students a feeling of familiarity and confidence. For example, our boat engine course might have a short section on safety procedures in each lesson. A standing head with a red cross emblem would be immediately recognizable, and your students would always know what to expect.
- Some sort of logo based on a stylized representation of the tools of whatever trade you are teaching can function as a subtle form of motivation. Such a device encourages students to identify their goals and aspirations with your school and your course.

Stock houses are not cheap, but manufacturers and other suppliers to whatever industry your course is designed to serve will often allow you to use their photos and drawings free of charge. Often they will even send you glossy prints and high quality reproductions. Usually all they expect in return is a "credit," a small line near the illustration saying: "Photo courtesy the Marine Widget Company."

- **Camera-Ready Art**

Finding, or creating, an original image is one thing; reproducing it effectively is yet another. Black-and-white photographs can be reproduced in a variety of ways. Least expensive are what are called "PMTs" (PMT stands for "positive mezzo tint"). These are simply black-and-white copies of an original (which can be in color), screened to create the dot pattern essential for offset printing.

PMTs are a little cheaper than halftone negatives. (They are also slightly lower in quality but, if the original is good, the difference is usually negligible.) Their greatest virtue is that they can simply be pasted in position on your "mechanical" (a mechanical is the pasted-up artwork you send to the printer). This represents a considerable savings in the "stripping" phase, when your printer shoots his negatives and starts to assemble all the various elements to make his plates.

- **Color**

Graphic designers, marketing specialists, and research psychologists all agree that color attracts reader attention and, properly used, contributes to interest and readability. Two-color work—adding a strategic touch of color here and there—is only slightly more costly than straight black-and-white printing. This is because printers estimate their jobs by establishing standard hourly rates for all their equipment. Two-color work either goes on a two-color press which is billed at a slightly higher rate, or it goes through a one-color press twice.

At the pre-press stage, two-color work can be done with very little in the way of added production costs. (Simple two-color features can be indicated on a tissue taped over the mechanical.) Your printer will have to prepare a second plate and wash up and change inks, but you are not talking about a lot of money.

Personal computers have revolutionized writing, editing, graphic design and layout. It's possible to produce a home study course without them, but it will take longer and cost much more.

Four-color, or "process" work is another story. Here we are talking about reproducing a color photograph. In most areas, you can expect the pre-press costs on even a small—say, 3" x 3"—four color illustration to be at least $100, and often more. And again, because four-color work has to be printed on more sophisticated equipment, the printing itself is more costly, too.

This makes the decision of when and where to use four-color process pictures an important one. Since you know your potential students are not great readers, and since you can easily produce as many as six or seven good black-and-white illustrations for the price of one in color, effective course design suggests that, here, quantity might be more important than color.

For some subjects, color is likely to be essential. If so, there are generally some economies you can make. There are, for example, different quality grades of color separations, so ask yourself just how precise the color has to be. If you can plan all your illustrations, or groups of them, to be the same size, it is often possible to "gang" some or all of them and save some money in the separation process.

- **Brokers**

Buying printing services calls for a certain amount of know-how. As a result, many companies whose printing needs are only occasional use print brokers to arrange for printing, and to see their job through the press. Print brokers are independent contractors who work on commission, paid by the printer. This will be reflected in what you ultimately pay for your job but, especially at first, it may be well worth it.

Be sure the broker's services include checking press proofs and doing press inspections—and go along when these are done (even if, as is often the case, they are early in the morning). If you ask the right questions and treat your broker like a consultant, chances are you can soon learn to negotiate a good printing contract and perform press checks on your own.

When the job is done, make sure you get your mechanicals back (the negatives and plates belong to the printer). Unless you are doing a major re-work of your course, you can make minor corrections and revisions on the original boards. And even if, when it comes time to reprint, you decide to change printers, you can use them again.

We have gotten right down to the nuts and bolts of producing course materials and staying within your budget. Now let's widen our perspective again to look at some other important elements that can help the success of your course, if they are designed into it: motivation, presentation, delivery, and servicing.

Picture of Success

You would never advertise your course with copy that said: "Sit home, night after night, and study! Sacrifice your leisure to hard work! Add to your stress by trying to reacquire good study habits you forgot years ago." But that is, in part at least, what completing a home study course means.

Faced with that reality, some students become discouraged. The bright hopes and plans that prompted them to enroll in your course are obscured by the day-to-day reality of keeping at it. For this reason, motivational devices of all sorts should be built into the design of your course from the outset. Remind them of their ultimate goal every step of the way, with pictures, sidebars, and success stories.

Most of your illustrations, of course, will be selected with an eye to teaching something. But you can—and should—use pictures with other purposes in mind. At the simplest level, inserting some sort of illustration into a visually barren page of text does a lot to keep your readers engaged. Such pictures (sometimes called "spot art") might well be motivational in nature.

Yes, the students in our imaginary marine engine repair course are interested in boats and motors. But they are also interested in a vision of themselves succeeding in that business. Look for, or commission, pictures that reinforce their sense of what they want to achieve.

Let's take an example: Early on, you want to emphasize to your students how important it is to have a clear understanding with their customers about the nature of the work to be done, the terms of payment, and when the work will be completed.

Such a discussion does not "need" an illustration in the same way a technical explanation of, say, a wet exhaust system might. But it is an excellent opportunity to use a drawing of a smiling, confident owner-mechanic talking to an attractive, obviously affluent couple, with a handsome yacht at dockside in the background. Never mind that working on marine engines often involves lying on your back in the bilges, wet and cramped, trying to undo a hopelessly corroded, hard-to-reach fitting. Show your students the upside of what the future may hold in store.

Not all your students will succeed, no matter what you do. You will always have some non-starts, and some who never finish. But you can reduce these numbers by helping them stay motivated.

There are other factors which influence your non-start and completion rates; you need to consider these, too, when you are designing your course.

Sight and Sound

Audio and video tape have an undeniable appeal for a home study course. They can improve its effectiveness by making many kinds of information more accessible. They are easy to use, and they can help motivate the student. Finally, they can make a course more "marketable."

Audio and video technologies are rapidly evolving. The practical benefits of this are a simultaneous increase in quality and decrease in cost. Today, professional quality audio and video tape productions are more affordable than ever before. Given all the benefits, using audio and video tapes for a home study course is an option definitely worth considering.

The decision to use them should be part of the overall course design. Revising an existing course to include them requires more than simply producing tapes that relate to the text material. They must be fully integrated into the course plan. Consider who your students are, your educational objectives, and if the benefits justify the additional cost.

- **Video**

Video has the advantage of making information accessible to people with a wide range of study skills. But, while it's tempting to assume that everything on video is necessarily easier to learn, it's actually harder for people to retain information presented in video than in print. Repeated viewings will improve retention, but video is best used as an adjunct to printed material. Use it for what it does best: showing operations or processes that are too complex or subtle to be adequately explained in text, diagrams, and still photos.

Your video must be more than "talking heads." Straight-out explanations are better handled in print. In the case of our marine mechanics course, a process like rebuilding a carburetor might better be shown in video than a series of diagrams or photos with text.

Another advantage of video is its immediacy. It's the closest you can come to putting the student in the working situation, short of actual hands on (virtual reality notwithstanding—you'll see more about that in a bit).

This immediacy also helps motivate. Putting the student "in" the situation helps them visualize themselves in the career for which they are training. Just as the motivational photograph of a marine mechanic with the attractive, upscale yacht owners helps students see the upside of their educational choice, a video shot in and around a busy marina would show many of the attractive elements of the power boating scene. On the other hand, a poorly produced video, without careful attention to people, wardrobe, lighting, and decor would do just the opposite.

Video is usually bid by the job, with all services and final product specified in a detailed production budget. There are video production companies in every city in America, even in smaller towns. While you're getting bids, look at the production company's sample "reel." This will indicate the level of production quality they can deliver.

Since most video used for home study courses shows detailed processes, it's important for the video company to be good at "table top" work. "Table top" refers to shooting objects up close, showing details clearly. Just because someone shoots beautiful sunsets doesn't mean they can shoot complicated technical operations close up so they are clearly visible without unwanted shadows, poor focus, light flares, etc.

Like photographs and illustrations, video must be professional to be effective. It's perhaps even more critical with video. Most of your students spend many hours each week viewing multimillion dollar programs and movies on television. Home study videos are judged by those standards. Better not to include a video than to include a poor one.

Expensive is not always better, but in video there is definitely a strong correlation between cost and quality. Technology brings equipment costs down but other production costs usually account for more of the expense.

What you provide for the production greatly affects the cost. If you have ready access to an appropriate environment—a "locality," as they say (an attractive marina, boats, and tools, in the case of our example) your video will cost much less than if everything has to be rented. When discussing budget, make sure the video company knows what you can supply.

Recent developments in computer animation have provided yet another affordable visual option. Right now, however, these systems can only produce relatively simple images. The sophisticated animation most of us are used to in TV commercials or on Monday Night Football is still expensive. And even the simplest computer animation does cost something.

Video production is divided into three phases: pre-production, production, and post production.

Pre-production involves everything prior to shooting: scripting, scheduling, art design, casting, locations, gathering props and costumes, and building sets. Production is the actual shooting. Post production is the editing of the final product, including sound mixing, video effects, and graphics.

The organization and execution of every production is unique. Which aspects are your responsibility and which are the video company's must be clear from the start.

After post production, you will receive a master tape from your production company. (Usually, a sub-master is made to protect the master from wear or damage in the duplication process.) Since video images degrade when they're duplicated—it's called "generation loss"—get the highest quality master you can afford. Your video company can recommend the best format for your needs.

The tapes you'll send your students are usually made by a separate, duplication service. These companies are numerous, and you can ask them to bid competitively according to your cost and quality needs.

- **Audio**

Most of the limitations and cautions that apply to video tape apply to audio tape as well. There are some additional considerations. Unlike video tape, the level of writing for the audio tape must take the typical student's reading level into account. However, information retention for most students will be similar to video, so additional written materials are usually needed.

Audio tape is especially useful for presenting concepts that rely exclusively on sound. Foreign language training is an obvious example. In the case of our marine mechanics course, audio tapes might be used to provide sounds of engines with typical problems to help the student learn trouble-shooting.

While producing an audio tape is not as costly or difficult as video, it still must be professionally produced. Like video, audio equipment continues to benefit from technological advances.

The recent development of digital equipment puts professional quality well within most schools' reach. Sound effects libraries on compact disks provide high quality effects at low costs. However, the proper use of such equipment is another matter. Buying a digital tape deck doesn't make someone an audio engineer. As with video tape, the better the quality of the master, the better the quality of your distribution tapes.

Technical quality isn't the only consideration. Any narration should be done by a professional announcer. Overall audio quality, including good vocal quality, are essential to making a "listenable" tape. An annoying voice or poorly read narration can make a tape useless.

New Technologies

The personal computer is really just beginning to revolutionize home study. Technology that cost millions of dollars a few decades ago now sits on millions of desk tops. And prices just keep coming down. This same trend is sure to make today's high-tech dreams into reasonably priced consumer products in the future—the near future more than likely.

Beyond using personal computers to create and service home study courses, their communications capabilities currently allows home study schools and students to interact electronically. With an adequately sized personal computer, modem, and phone line, you can have a system for students to send in tests and get their grades without the costs and delays of paperwork and postage.

Of course, using personal computers for communications requires a higher level of sophistication from your students. They must own the right equipment and know how to use it. For our marine mechanics course, it's unlikely many students would have this kind of equipment. On the other hand, if you're creating a computer repair course, the chances are very good they would.

But the number of students with the equipment and know-how is rapidly growing. Most high schools, junior highs, and even primary schools now have personal computers and computer courses. Every day more of these students are becoming part of the home study market. Even as people become more computer literate, personal computers are becoming easier to use. Along with more "user friendly" software, personal computers that recognize handwriting and the human voice are right around the corner.

As telecommunications capabilities expand, so do the possibilities for distributing and marketing home study courses. Interactive cable television, fiber optic phone lines, cellular phones, and satellite communications are making it easier to send and receive information.

CD-ROMs represent another new technology with strong home study potential. CD-ROMs store large amounts of text, visual images, and sound on a single compact disk for easy access on a personal computer. Material that would take many pages of printed text and additional audio tape can be placed on a single disk that's easy to use, transport, and store.

Interactive multimedia systems take things a step further. These link a variety of audio, video, and data sources through a personal computer, allowing the individual user to access and combine visual images, text, and sound on a given topic. For example, a student can see the musical score for a Mozart symphony, along with a critical text, and then command a synthesizer to play a single violin part to see how it sounds.

Further down the road there is virtual reality (VR). VR uses computer technology along with sophisticated audiovisual displays and sensors to simulate actual experiences. VR isn't available for personal computers yet, but it will be. Some day our marine mechanics students may gather around a virtual marine engine with an instructor in another country for "hands-on" training, without ever having to leave home. Given current trends, in the future all education may very well be home study.

Getting Off on the Right Foot

You want all your new students to get in the habit of plugging away at lesson after lesson. This means getting them started right away, as soon as they receive their course. After all, that is when they are likely to be most excited and enthusiastic.

To begin with, you can do a lot to decrease non-starts by paying special attention to your first few lessons. The very first lesson, especially, is critical in any home study course. The package of startup materials that includes the first lesson can help, but getting them really rolling depends more on designing that lesson so it both provides an immediate sense of achievement and is easy to complete. Your first lesson, then, should be both motivational and substantial. Spend some time reminding the student about the opportunities these new skills represent, and teach them something—something you can safely assume few of them know, something they can use immediately.

The first examination should be challenging, but absolutely straightforward and procedurally simple—no trick questions, no assumptions regarding knowledge or skills that are not specifically taught in the first lesson. The idea is to give students a psychological boost, by making them see they can do it if they try.

Pacing, Delivery and Incentives

Next, you need ways to sustain student progress. We mentioned earlier that part of course design is deciding what to teach, when, and in what order. This is an important element in putting your subject across effectively. But it also matters at the basic level of helping the student simply get through the course without bogging down.

In every home study course, there is at least one lesson that is a real killer. Perhaps the problems are really psychological. Shop math, for example, is not all that difficult, but many people simply shut down—emotionally and intellectually—when they see a lot of formulas and four-place decimals staring them in the face. Still, there is no way around teaching it to our budding marine engine repairpeople—eventually.

There is much that can be done in the writing of such lessons, to make them less intimidating and more accessible. But think about when and where you really need to present this material, too. We tend to assume we have to teach fundamental material right away, in the beginning, but this is not always necessary. There is really no need to present it until they are going to use it. Often you can plan your course so as to defer some of the more difficult material until your students have experienced some success with easier material. (Remember, success is the greatest motivation builder there is.)

Even when you get students to make a good start, some still will not finish. Consequently, course design also means planning your presentation in increments that encourage students to reach the milestones that flag your contractual rights to a certain percentage of your tuition.

Dividing your course into shipments may help. When enrollments are high enough, and you have enough data on student performance, you may find you can predict your dropout rate accurately enough to print fewer of the lessons in the later shipments. Over the years this can represent considerable savings—not just for printing, but for postage, warehousing, packaging, and handling too.

You also need to estimate the cost of the materials in your first shipment as accurately as possible, including the various motivational and administrative materials you include. (If you plan to include kits or tools, such planning and estimating are even more important.) You will never eliminate non-starts completely, so you want a tuition down payment that enables you to break even, at least.

With a course divided into several shipments, the order of topic presentation also provides more options for keeping students motivated. In every field, there are some areas which seem more glamorous than others, especially to beginners. Dividing a course into shipments allows you to hold back some of this special expertise, like a carrot on a stick. Try to design your course so material of this sort is strategically spaced out, in different shipments. Then the thought of getting to something especially desirable in the second shipment provides an extra incentive to finish the first, and so on.

You can even use your packaging to help keep students on track.

Packaging is Part of the Message

Packaging your course materials attractively and effectively is an important part of course design. You know a home study course is much more than just a collection of books and reference materials, but this is not immediately apparent to a new student. Much of the value of any course is intangible—the service, the evaluation and advice you provide, the ability to call on a sympathetic and helpful instructor.

So when you ship new students their first study materials, try to make them reflect the real value of the training you are providing. A short pamphlet that lays out your procedures for taking and returning examinations and requesting additional help can, for example, emphasize the importance of these services. A one-page, step-by-step guide to completing and mailing the first examination, together with a stamped pre-addressed return envelope and a short motivational letter urging the student to get started immediately will help reduce non-starts.

Other recommended features include three-ring binders to hold lesson materials, a shipping box designed to double as a storage box for tools, reference materials, or work-in-progress—even something as simple as a pre-sharpened pencil. These all add to the student's perception that you are trying to make the learning process as painless and effective as possible.

There are a lot of different ways to handle the mechanics of packaging and shipping a home study course. Depending on the nature of your study materials, you may find it best to use a special shipping box that doubles as a permanent storage device; you may want to use three-ring binders or slip cases.

If you do include permanent binders or cases, you may want to send them out with the last shipment, rather than the first. That way, the binder (or whatever) becomes yet another incentive for finishing the course (and you will not find yourself giving them to non-starters and dropouts).

How your course is to be serviced is another element which must be incorporated into the course design. This involves designing efficient ways to handle student questions, accounting, billing, testing, and grading—or smoothly plugging your new course into systems already in place.

Testing and grading are especially important. Well-written multiple-choice examinations are from an educational point of view the most effective form of written testing. They are also the most efficient and cost-effective from an administrative standpoint. By contrast, essay questions pose a lot of problems. They can be an effective testing device for certain types of material—if writing skills are important to the students' training, for example—but they are often difficult to evaluate properly.

Another important question: Does every lesson need an examination? The first one does; you want to initiate contact with a new student as soon as possible. But thereafter you may find that, for testing purposes, you can cover two or even three lessons with a single examination. Self-tests give students a way to check themselves on the interim lessons for which no submission is required. The savings in service costs with such a system are self-evident, and there is no evidence that the quality of the training suffers. Generally, try to plan your course so students have some sort of contact with you at least once a month—more often if possible.

Think ahead, too. For example, your resources may not permit you to use automated grading or posting right now, but in a year or two perhaps you can. It will be easier to make the change if the answer sheets for your examinations are designed with that in mind from the outset. Whenever possible, design for the future; think of where you want to go.

What about forms of graded work other than written examinations—projects designed to provide practical experience? Most hands-on projects are likely to be expensive, especially if the student's work has to be shipped to your school, evaluated, and then returned. There are certain subjects in which this is probably the only way a student's understanding of the material can be adequately measured. If so, the work should be planned very carefully in terms of the overall course design.

Certainly projects of this sort should be designed to serve more than one educational goal. Ideally (although this may not always be possible), they should also be placed well into the program, when the likelihood that the student is going to complete the course successfully is higher.

If the time it takes to service such a project is much longer than that required to handle a normal lesson, the course should be designed so to allow the student to continue working on other things while waiting for a major project to be graded and returned. Inactivity breeds drop-outs.

Conclusion

To recapitulate: A home study course is a multi-faceted delivery system for a very specialized kind of educational experience. Unless you think and plan in terms of the entire system, the course will not achieve your goals.

The first step is to analyze the demographics of your prospect pool. The more hard data you have about their age, gender, educational level, reading skills, and vocational experience, the better. Ideally, you should understand their dreams and aspirations, too. The more you know about the prospective students you are targeting, the more successful your planning, and hence your course, will be.

First of all, understanding your prospective students will help you decide what really needs to be taught, and where in the course you need to teach it. The nature of the skills and information you are trying to communicate also affects your course format, your prices, your packaging, and your servicing.

Remember, good writing is the rock on which the whole structure stands. Good writing is clear; good writing is accessible to its audience; good writing not only instructs but entertains and motivates as well. If you have to choose, put the lion's share of your effort, and your money, here. In most areas of training and instruction, carefully-planned illustrations are important, too. They will always enrich an explanation, and they can also be used to motivate and inspire.

For reproducing large quantities of course materials, printing remains the most economical way to go. Pre-press production is the most time-consuming, and the most expensive part of producing a course; once on the press, you can see the light at the end of the tunnel.

It is important to think of course design as a holistic process. Good design accomplishes a multitude of goals: It reduces servicing costs and lets you deliver more and better training, and it motivates students and helps them learn. And that is why we are here.

Chapter Eleven

Desktopping Great Looking Courses

by
Sally R. Welch
Assistant Director
National Home Study Council

The Author

Sally has been designing and editing the National Home Study Council's publications since 1976. She authored the NHSC Public Relations Handbook, *as well as authored and co-edited several other NHSC publications. She has a B.A. Degree in Journalism from the University of Maryland and a M.A. Degree in Publications Design from the University of Baltimore.*

Sally has assisted several schools in designing course products, and has given presentations on desktop publishing and newsletter design at numerous Workshops and Conferences around the country.

Introduction

Technology has always had an impact on visual communications, and correspondence courses rely heavily on visual images. Today, you can use your personal computer to produce high-quality, great looking printed courses. A desktop publishing system, which is a fancy and powerful word processing system, allows you to design and layout visually pleasing pages.

For many years, photo-typesetting set the standard for professional quality document production. Today, although the quality is not quite as good, desktop publishing offers several advantages: speed, flexibility, cost, and reduced production time. You should remember, however, that a desktop publishing program is just a tool. Effective graphic design is **not** just a default setting on your computer. It takes an understanding of elements of effective design and how they should be used to communicate your message.

In the previous chapter, Dennis Foltz explained that a home study course is a multi-faceted delivery system for a very specialized kind of information, and that good design accomplishes many goals: reduces servicing costs, lets you deliver more and better training, motivates students and helps them to learn.

In this chapter, we look at the various elements that make up good graphic design. Our objective is to give you enough knowledge of these elements so that you can design a home study course that is visually pleasing, motivational and educationally effective.

Effective Graphic Design

Effective graphic design is the least expensive way to improve the communicating power and cost-effectiveness of your home study course. Effective graphic design attracts attention and invites the student to read the course. It motivates the student and establishes the credibility of your message. It makes your ideas easy to understand and it helps your students learn.

Effective graphic design enhances your message by—

- **Emphasizing what's important:** Effective design creates a hierarchy of information so readers can easily separate major points from supporting details.

- **Organizing information:** Effective graphic design breaks information into manageable, bite-sized pieces. It makes it easy for readers to locate quickly the important information and helps readers concentrate on one idea at a time.

- **Guiding the readers:** Effective graphic design recognizes that readership declines every time a visual obstacle is placed in the reader's way. Therefore, it leads the reader through the course by creating a logical sequence of ideas which unfold as the reader continues to read.

Principles of Typography

Type is the basic building block to desktop publishing. Type creates words, and words convey your message. Yet, type also creates visual impressions that act upon the reader. So remember, the type you choose and the way it's placed on a page can help your reader understand your message.

Typeface: Typeface refers to the shape or outline of the letters, numbers and symbols. Each typeface has its own unique characteristics that nonverbally communicate with the reader. You should choose a typeface that "speaks" to your readers in the tone of voice most appropriate to your home study course.

There are two primary categories of typefaces: Serif and Sans-serif.

D E F G

Times Roman, a serif type.

- Serif type is characterized by tiny extensions or feet at the edges of each letter. These extensions serve both a decorative and a practical purpose. The tiny serifs provide a transition from letter to letter which helps the reader's eye to move horizontally. This is why serif type is often used in the body copy of a course. Research shows serif type increases reading speed 7 to 10 words per minute.

D E F G

Helvetica, a sans-serif type.

- Sans-serif type is high-impact and very simple in appearance. The letters do not include any "feet" or decorative extensions. Sans-serif type is usually **not** a good choice for body copy, as the lack of serifs can slow the reader. When used in small doses, sans-serif type has a boldness and simplicity that adds impact. However, if you do decide to use a sans-serif type for text, you can make it more legible if you make the column width no more than 13 picas, add extra space between the lines and use a ragged-right margin.

According to a survey of NHSC member schools who use desktop publishing for their courses, the most popular typefaces are Times Roman and Helvetica. Others typefaces in use include Palatino, Bookman, Avant Garde, Goudy and Optima.

Other Attributes: Typefaces also have the following attributes—

M M M M M

30pt 24pt 18pt 14pt 12pt

- **Size:** refers to how tall letters and numbers will be when printed. Type is measured in points, approximately from the top of the ascending letter to the bottom of the descending letter. There are 72 points to an inch.

M **M** **M** M

Weight

- **Weight:** refers to the density of the letters, to the lightness or heaviness of the strokes. It is described as a continuum: light, regular, book, demi, bold, heavy, black, extra bold. Not all typefaces are available in all weights.

M M M

Normal *Condensed* *Expanded*

- **Width**: each typeface has its own unique horizontal characteristics. Some are wider than others, some are denser. Therefore, lines set in some 12-point typefaces will contain more letters and possibly more words than lines set in other 12-point typefaces. Type size and line length are very closely related. Widths are condensed, normal and expanded.

roman & *italic*

Posture

- **Posture:** refers to the slant of the angle of a type character, either vertical or inclined. Vertical type is called roman. Inclined type is called italic or oblique.

STYLE **STYLE**
STYLE STYLE
~~STYLE~~ STYLE

- **Style:** refers to type attributes which are independent of type size or alignment. This refers to whether the type is set in boldface, italics, and other modifications of a basic typeface. Boldface is the most effective way to make type stand out. Italic type can provide subtle contrast to the main text, but it does not provide emphasis. Italics is used mostly for captions, quotes, names of publications and other short items.

Helvetica
Helvetica Italic
Helvetica Bold
Helvetic Bold Italic
Helvetica Condensed
Helvetica Condensed Oblique
Helvetica Condensed Bold
Helvetica Condensed Bold Italic

- **Family:** all of the variations of a single typeface—different weights, widths, slants and styles—constitute a type family.

Restraint: desktop publishing's hardest lesson is that of constraint. With so many typefaces, type sizes and type styles it's easy to get carried away. As a rule of thumb, restrict your use of attributes to three per project.

Other Design Elements

When arranging type on a page, there are other elements that you need to consider:

- **Leading:** refers to the space between the lines. All desktop publishing programs permit you to modify the leading to improve the appearance and communicating power of your course. Desktop publishing programs start with the automatics, or default setting. In most cases, the automatic setting will add an extra 20 percent to the height of the line. Therefore, your leading option will read "120%." You can increase the word density of your course by tightening the leading, or likewise open up your publication by increasing the leading. Leading becomes of crucial importance in large headlines. As a rule of thumb, you should add 2 to 4 points of leading to the type size of a headline. For example, if you are using 10 point type, use 12 points of leading (written 10/12). If you are using 14 point type, use 18 points of leading or 14/18.

10/10 Times Roman

These three type samples are all set in 10-point Times Roman. The first is set solid (10/10), the second is set tight (10/11), and the third (10/12) is set with PageMaker's automatic leading (120% of the point size).

10/11 Times Roman

These three type samples are all set in 10-point Times Roman. The first is set solid (10/10), the second is set tight (10/11), and the third (10/12) is set with PageMaker's automatic leading (120% of the point size).

10/12 Times Roman

These three type samples are all set in 10-point Times Roman. The first is set solid (10/10), the second is set tight (10/11), and the third (10/12) is set with PageMaker's automatic leading (120% of the point size).

- **Alignment:** describes how type is arranged from left to right on a page or within a column. There are flush left/ragged right; flush right/ragged left; centered, and justified.

  Flush left/ragged right is the easiest to read because the first letters of each line appear where the reader's eyes expect to find them—at the extreme left of the line. Flush left/ragged right type maintains consistent word spacing and allows the extra space that may occur on a line of type to appear consistently at line endings. The pockets of white space at text edges also adds needed breathing room on some layouts.

  Flush right/ragged left is useful for aligning page numbers in columns. The disadvantage of flush right is that it slows the reader because the reader's eyes have to search for the first words on each line.

  Centered is often used in headlines and as a rule of thumb you should not center more than four lines of type.

  Justified is characterized by ruler-straight column edges. The last letter of each line is directly below the letter of the line above it. Justified creates "grayer" looking pages because the white space on each line is spread throughout the line, instead of at the end of each line. Research shows that those people who do not read well find justified type more difficult to read.

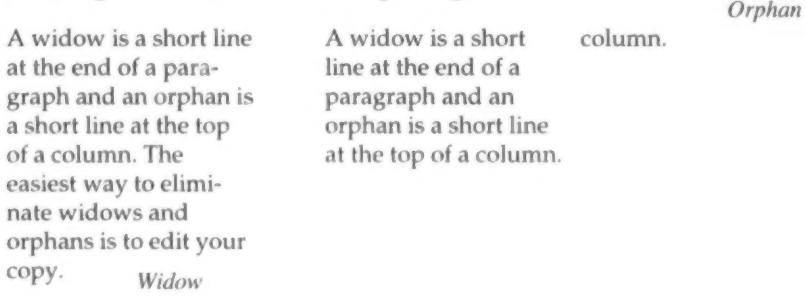
- **Hyphenation:** Hyphenation occurs when words are split, so they start at the end of one line and continue at the beginning of the next. Most desktop publishing programs let you turn the hyphenation feature on or off (manual) or specify the numbers of consecutive lines which can be hyphenated. Generally, you should not hyphenate more than two consecutive lines.

- **Kearning:** Kearning refers to the adjusting of spacing between specific pairs of letters. Kerning is very important when slanted letters, such as A's, V's or W's, appear next to each other in headlines or chapter heads. The most common character combinations that require kerning are:

  To Tr Ta Yo Ya Wo Wa P. TA PA yo we

- **Tracking:** Tracking refers to adjusting letter and word spacing equally throughout a publication. By adding a slight amount of extra space between words, fewer words will fill a page. You should make sure that the words are easy to read by not having the letters overlap or spread too far apart.

- **Widows and Orphans:** A widow is a short line at the end of a paragraph and an orphan is a short line at the top of a column. The easiest way to eliminate widows and orphans is to edit your copy. If that isn't possible, try subtly increasing or decreasing the word and letter spacing.



A widow is a short line at the end of a paragraph and an orphan is a short line at the top of a column. The easiest way to eliminate widows and orphans is to edit your copy.

A widow is a short line at the end of a paragraph and an orphan is a short line at the top of a column.

Orphan
Widow

- **Tabs and Indents:** The first line of type in a paragraph is customarily moved to the right of the rest of the lines in the paragraph. Desktop publishing programs permit you to specify multiple tab settings across the page. It is very important that you use the tab key to line up each column of type. Research studies have shown that people can read text faster if paragraphs are indented and extra space is placed between paragraphs.

Various indents

This paragraph has a left hand indent. Only the first line of the paragraph is indented.

This paragraph has both the left and right sides indented.

This paragraph has a hanging indent. The first line of a paragraph extends to the left of the remaining lines of a paragraph.

Type and Position for Headlines

The purpose of a headline is to attract the reader's attention, break up the information and summarize the section's topic. Here are some do's and don'ts to follow for effective headlines:

- Do select a headline type and size that forms an obvious contrast with your body copy. An effective headline stands out clearly from adjacent copy. The easiest way to achieve contrast is to use a larger and bolder typeface.

- Do use white space to drawn attention to headlines. White space can be more important than large, bold type in emphasizing headlines. The best horizontal spacing around headlines is twice as much space above as below.

- Do establish a consistent pattern in your use of upper case type. Use the same style of capitalizing headlines throughout your course. Subheads and other reader cues can contrast from your headline pattern, but each of those elements should be consistent.

- Do break the lines of a headline logically and attractively. Read your headlines out loud and form line breaks where your voice naturally pauses, usually before a preposition.

- Do be consistent in using flush left, centered or flush right headlines. Inconsistency leads to visual clutter and a random, disorderly look.

- Do adjust the leading for your headline. Letter spacing becomes very critical as type size increases.

- Don't set headlines so large and bold that they overwhelm surrounding material. Headlines should not need to "shout" at the reader to gain attention.

- Don't use all caps if you are using a long headline. Readers are most comfortable reading content composed of both upper and lower case letters.

Don't use all capital letters for headlines.

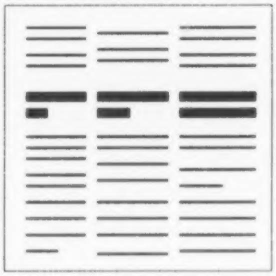
LONG HEADLINES IN ALL CAPITAL LETTERS ARE VERY HARD TO READ

- Don't set long headlines in italics as it slows the reader down.

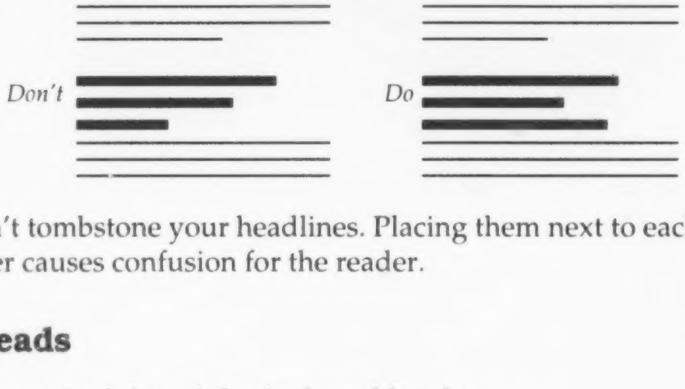
- Don't center headlines that are more than three lines.

- Don't set headlines that are more than 3 words in reversed type. Reversed type is better applied to section headings in a publication or a few key words in an advertisement.

Don't tombstone headlines.



- Don't staircase multiline headlines. In three-liners, the middle line should be either the longest or the shortest. Also, don't write a headline more than three lines.



- Don't tombstone your headlines. Placing them next to each other causes confusion for the reader.

Type and Position for Subheads

Here are some do's and don'ts for subheads:

- Do use subheads to break long expanses of body copy. Subheads add visual interest and provide clues that reinforce important information, show progression of content development and help readers quickly locate desired information. They also segment the copy visually into a few, easy-to-read text blocks.

- Do select a typeface for subheads that contrasts sufficiently from the text. You may select the same typeface used for headlines, but in a smaller size.

- Do be consistent in your use of subheads. If subheads are set in boldface type, they should be set that way throughout. Likewise, if they are centered, flush left, flush right or accented with white space or horizontal rules, this treatment should be consistent.

- Don't overuse subheads. Too many subheads clutter a page and interfere with the reader's progress through the text.

- Don't squeeze subheads between sections of text without adding some white space.

Layouts

Layouts provide the glue that integrates type and graphics. Layouts present words and graphic images for readers in an organized, visually appealing fashion and reinforce your message. A strong layout creates a cohesive unit of a series of separate, unconnected parts.

Formats define your page layout, that is the placement of margins, borders, columns, rules, headlines, titles, page numbers, and other elements repeated on every page. You should base your page layout on a defined grid.

Grids

Grids consist of non-printing horizontal and vertical lines that organize consistent placement of type, artwork, and graphic accents. Grids are the basic tool of designing attractive, effective layouts. They define the placement of text and graphics on a page.

Among other functions, grids define:

- the location of information repeated at the top and bottom of each page;

- the location of page numbers;

- the location and size of rules and boxes used to make page borders;
- column widths, location and spacing;
- vertical rules between columns;
- horizontal rules between body copy and information at the top and bottom of each page;
- the size and location of your school's logo; and
- headline area(s).

The number of columns of content does not have to equal the number of columns appearing on a grid. For example, a six column grid would permit these four variations:

- a single column of type, illustrations or photographs six columns wide;
- a double column of white space and subheads next to a four-column wide expanse of body copy;
- a double column of white space containing subheads and illustrations adjacent to two double columns of body copy; and
- three double columns of body copy.

Columns

When figuring column sizes, the goal is to include between 35 and 60 characters per line or an average of seven to ten words. Narrow columns of large type cause the reader's eye to jump too frequently from one line to the next. This text arrangement also leads to an unusually large amount of hyphenated words at line endings and creates awkward word spacing if the text is justified. Wide columns of small type are also difficult to read because there are too many words on a line, requiring more concentration on the part of the reader. Wide columns of small type also create an overall "gray" appearance.

Graphs, charts and illustrations should generally be aligned with the grid structure. Otherwise, a hodgepodge of visuals and split text column widths result, which may disrupt reading.

Here are some hints for planning grids:

- Use multi-column grids for greater layout flexibility.
- Consider using grids that contain columns of different widths. A grid that combines a narrow column with a wider column or columns permits easy placement of subheads, artwork and planned areas of white space.
- Design your project based on reader's spreads. Usually readers will see left and right-hand facing pages or panels. Aim for a pleasing balance of text, white space and visuals on those adjoining surfaces.

White Space

White space is the another major tool used to design effective layouts. Although white space is usually perceived as the absence of something, white space is actually a calculated way to focus attention on important text and graphics.

You should make white space an integral part of your format. Blocks of white space provide needed contrast.

Don't overcrowd a layout with too much content. The more elements included in a given area the less impact each element is likely to have on the reader. By replacing some type of visuals with white space, you emphasize those that remain. This guideline discourages the use of "filler copy," which only dilutes the impact of more important content.

Plan additional white space at the top and bottom margins of each page or panel. A consistent sink, or block of white space, at the top of each page can be contrasted against irregular column endings at the bottom of each page.

You should not leave "holes" or blocks of white space in the middle of your layout. Extra, unexpected space in the interior of a layout may emphasize only the fact that you haven't planned your content well. Too much white space in the interior of a page blows the page apart, alienating text areas.

Keep internal white space allowances consistent. Column dividers should be the same width between all columns throughout a course. Similarly, the space between paragraphs, stories or sections of content should be determined and maintained consistently.

To be effective, white space should be concentrated primarily at the edges of a page. This reinforces the margins and white space, and shapes page content attractively. White space on the edges of a page also helps focus the reader's attention on the page content quickly.

Other Design Elements

Pull Quotes: A pull quote (also referred to as an "out-quote") is a short phrase or sentence which emphasizes a portion of nearby body copy. Pull-quotes are often placed in boxes or set against a gray background.

Pull-quotes can be placed in a variety of ways and don't necessarily have to be positioned consistently. Size the pull-quote area to conform to your grid, however, using increments of column widths of perhaps just a half-column width.

Select a typeface that contracts against text type. Use a more prominent version of your text type, such as bold or bold italic in a larger than text type size. Or use a contrasting version of your headline type, making sure the pull-quote cannot be confused as another story start.

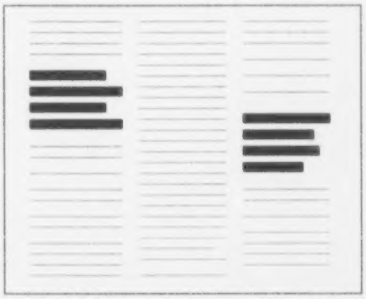
Don't make pull-quotes too wordy and provide a line or two of white space above and below the quote. A pleasing frame of white space emphasizes the quote and adds enough contrasting breathing room to make solid text columns look less intimidating.

While you can place pull-quotes in a variety of ways on a layout, you should use the same pattern of typeface, size, line spacing and framing. You may choose to use a generous frame of line space only, a top and bottom rule, a complete box, or a tint screen. Whatever you decide, implement the treatment consistently.

Various placements of pull-quotes:

- Staggered placement avoids the tombstoning affect.

Staggered placement avoids the tombstoning affect.



Pull-quote in right-hand margin.

- Right-hand margin placement competes less with headings.
- A cut-in quote can be used if the margin is tight.
- A two-column quote is best placed near the top of the page.
- Placing a quote atop the page takes advantage of top margin's high visibility (but it can be mistaken for a heading).
- A tall, thin quote inserted between two narrow columns is visually striking.

Sidebars: As Dennis Foltz explained in the previous chapter, sidebars are short discussions separated from the main text. Usually they are boxed and/or screened. Sidebars are an ideal place to introduce background or motivational material. A few words of warning about sidebars—don't over do them. Remember that everytime you interrupt a flow of text, it slows your reader down. If you use too many sidebars or put them in the wrong places, your reader will be frustrated instead of motivated.

The best place to position sidebars is at the bottom of a page or in the right hand column of a right page. Try to make it as easy as possible for your reader to continue reading without having to "jump over" or "work around" your sidebars.

Boxes and Borders: Use boxes and simple borders to organize content for the reader. Just remember that random boxing and bordering will confuse the reader and may clutter the document.

Boxes can be used to frame charts and photos neatly, so they appear to fit more clearly within the grid structure of a layout. A content frame of any kind, including tint screen blocks, should conform to the column widths on your layout.

Text inside a box looks best when it's set one point size smaller than the surrounding body type, but don't set smaller than 9-point type.

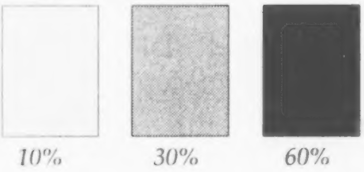
Lines and Rules: Vertical rules may not be necessary to separate text columns, but can be used as an attractive pattern. If used on one page, they should be used on all pages, unless you are seeking occasional contrast.

Don't use rules as a cover for a poor layout or text arrangement. If content is squeezed too tightly together, or if the sequence of text appears difficult for a reader to follow, the addition of a rule is not going to solve the problem for the reader.

Don't use thick vertical rules between columns or sections of text. Vertical rules that are more than one-point thick distract readers. Horizontal rules can get as thick as your design sense dictates without disrupting reading. They can be applied to page or panel tops to encourage flow through the document and to indicate related columns of content. Horizontal rules can define the bottom edge of a publication or brochure, giving a finished look to ragged bottom column formats. And they can define the top and bottom of a pull-quote used to break solid areas of text.

Finally, when in doubt, remember with rules and boxes, **less** is more.

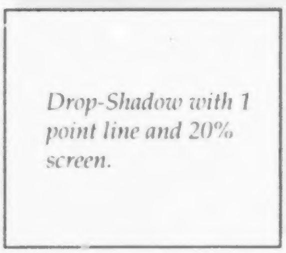
Samples of screens.



Screens: Tint screens, like boxes, can separate and emphasize content attractively. The screens can be used alone or applied within an area already boxed. Usually 10% screens are too weak, so when you are placing text on top of a screen, use a sans-serif type with a 20% screen.

The quality of the screens also tends to be coarse, so heavier densities of 30% and greater can be dizzying when used with overprinted type.

If project quality is critical, consider having your commercial printer drop in the tint screens. Then you'll get the density and smoothness you desire.



Drop-Shadow with 1 point line and 20% screen.

Drop-Shadow: The three-dimensional effect of shadow boxes is very popular, but can be over-used easily. Reserve their use for content that requires special emphasis or for photo accents—if your document does not use more than a photo or two on a page.

Avoid making the depth of the shadow too prominent. If it gets more than 10 or 12 points thick, the accent overwhelms the content. If you are using a screen for the shadow, don't add a rule to it.

Bullets: Bullets are cues to the reader that a sequence of items is provided. Since lists are usually fast and easy to read, bullets help attract readers to this kind of content.

Bullets

- • Filled
- ■ Boxes
- ⇨ Arrows
- ☞ Pointers

You can use solid boxes or round dots for bullets. There are also arrowheads and bold outline boxes. Asterisks and hyphens are faint, weak forms that don't have enough weight to attract attention effectively. Stars and other symbols quickly become gaudy; and like asterisks, they indicate an out-of-date design.

In PageMaker this bullet (•) is made by drawing a small line using the dotted line in the "Lines" menu.

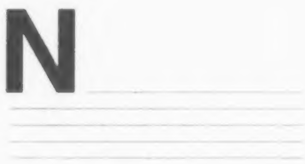
(•) This bullet was made by typing an "o" in 8-point Helvetica bold and then coloring it in with a black pen.

Initial Caps: An enlarged capital letter at the beginning of a text block encourages the reader to begin reading the text. The accent cap can be treated in a variety of ways and sizes. The key is to select one treatment and use it consistently.

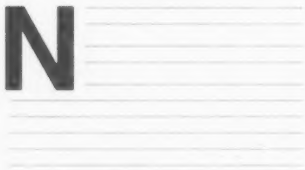
Many publications "sink" a cap into the first paragraph of a major story, extend the cap above the first text line, frame the cap in a box, or reverse it in a solid or screen box.

When used to accent content starts and logical divisions of content, these cap treatments increase readership by about 13 percent. If over used, however, the value of contrast can be lost and so are your readers.

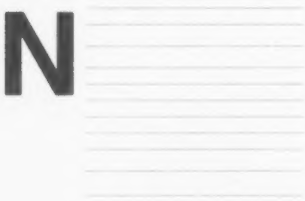
Raised cap



Cut-in or drop-cap



Freestanding or hanging cap



There are three basic types of initials:

- Raised or upstanding or stick-up initials rise above the first line.
- Cut-in or drop-cap initials are inserted into an indented space.
- Freestanding or hanging initials are placed outside the column.

Most of the popular desktop publishing programs have various commands to automatically arrange text around a capital letter. You just specify how large and what type style you want the capital letter to be.

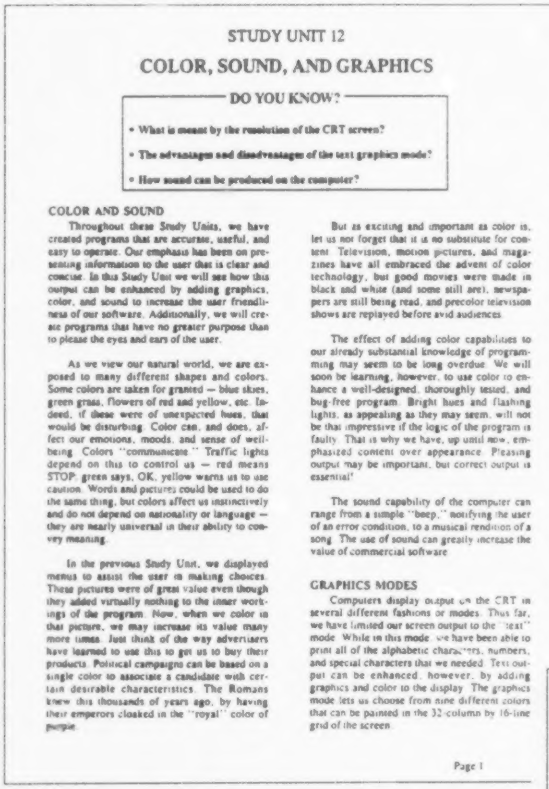
Summary

Remember to keep your design simple and inviting to the reader. By using the appropriate elements we discussed above and placing them correctly on the page, you can produce a great looking course. However, no amount of good design can make up for a poorly written course. Content and design work hand-in-hand to produce a course which is visually pleasing, motivational and educationally effective.

The following appendicies show examples of home study text pages before and after they were redesigned. Notice how the various elements are used to give emphasis to certain portions of the text. You should decide what is the most important point you want to stress and then emphasis it in a selected way.

Samples of Redesigned Courses

Before



STUDY UNIT 12

COLOR, SOUND, AND GRAPHICS

DO YOU KNOW?

- What is meant by the resolution of the CRT screen?
- The advantages and disadvantages of the text graphics mode?
- How sound can be produced on the computer?

COLOR AND SOUND

Throughout these Study Units, we have created programs that are accurate, useful, and easy to operate. Our emphasis has been on presenting information to the user that is clear and concise. In this Study Unit we will see how this output can be enhanced by adding graphics, color, and sound to increase the user friendliness of our software. Additionally, we will create programs that have no greater purpose than to please the eyes and ears of the user.

As we view our natural world, we are exposed to many different shapes and colors. Some colors are taken for granted — blue skies, green grass, flowers of red and yellow, etc. Indeed, if these were of unexpected hues, that would be disturbing. Color can, and does, affect our emotions, moods, and sense of well-being. Colors "communicate." Traffic lights depend on this to control us — red means STOP, green says, OK, yellow warns us to use caution. Words and pictures could be used to do the same thing, but colors affect us instinctively and do not depend on nationality or language — they are nearly universal in their ability to convey meaning.

In the previous Study Unit, we displayed menus to assist the user in making choices. These pictures were of great value even though they added virtually nothing to the inner workings of the program. Now, when we color in that picture, we may increase its value many more times. Just think of the way advertisers have learned to use this to get us to buy their products. Political campaigns can be based on a single color to associate a candidate with certain desirable characteristics. The Romans knew this thousands of years ago, by having their emperors cloaked in the "royal" color of purple.

But as exciting and important as color is, let us not forget that it is no substitute for content. Television, motion pictures, and magazines have all embraced the advent of color technology, but good movies were made in black and white (and some still are), newspapers are still being read, and precolor television shows are replayed before avid audiences.

The effect of adding color capabilities to our already substantial knowledge of programming may seem to be long overdue. We will soon be learning, however, to use color to enhance a well-designed, thoroughly tested, and bug-free program. Bright hues and flashing lights, as appealing as they may seem, will not be that impressive if the logic of the program is faulty. That is why we have, up until now, emphasized content over appearance. Pleasing output may be important, but correct output is essential!

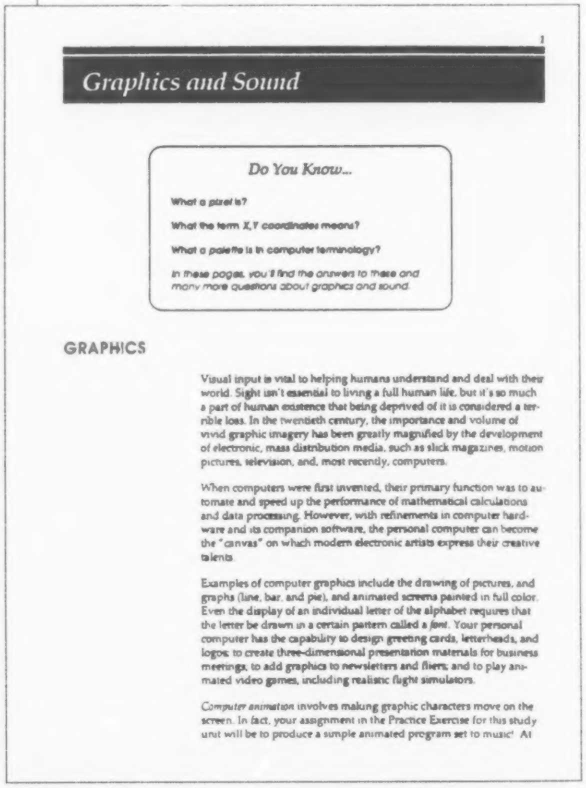
The sound capability of the computer can range from a simple "beep," notifying the user of an error condition, to a musical rendition of a song. The use of sound can greatly increase the value of commercial software.

GRAPHICS MODES

Computers display output on the CRT in several different fashions or modes. Thus far, we have limited our screen output to the "text" mode. While in this mode, we have been able to print all of the alphabetic characters, numbers, and special characters that we needed. Text output can be enhanced, however, by adding graphics and color to the display. The graphics mode lets us choose from nine different colors that can be painted in the 32-column by 16-line grid of the screen.

Page 1

After



1

Graphics and Sound

Do You Know...

What a *pixel* is?

What the term *X,Y coordinates* means?

What a *palette* is in computer terminology?

In these pages, you'll find the answers to these and many more questions about graphics and sound.

GRAPHICS

Visual input is vital to helping humans understand and deal with their world. Sight isn't essential to living a full human life, but it's so much a part of human existence that being deprived of it is considered a terrible loss. In the twentieth century, the importance and volume of vivid graphic imagery has been greatly magnified by the development of electronic, mass distribution media, such as slick magazines, motion pictures, television, and, most recently, computers.

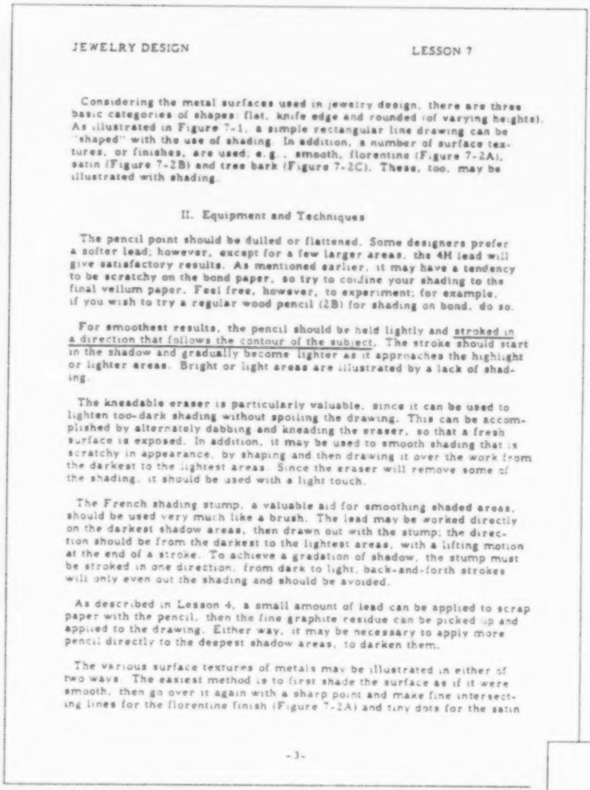
When computers were first invented, their primary function was to automate and speed up the performance of mathematical calculations and data processing. However, with refinements in computer hardware and its companion software, the personal computer can become the "canvas" on which modern electronic artists express their creative talents.

Examples of computer graphics include the drawing of pictures, and graphs (line, bar, and pie), and animated screens painted in full color. Even the display of an individual letter of the alphabet requires that the letter be drawn in a certain pattern called a *font*. Your personal computer has the capability to design greeting cards, letterheads, and logos; to create three-dimensional presentation materials for business meetings; to add graphics to newsletters and fliers; and to play animated video games, including realistic flight simulators.

Computer animation involves making graphic characters move on the screen. In fact, your assignment in the Practice Exercise for this study unit will be to produce a simple animated program set to music! At

Courtesty: International Correspondence Schools

Before



JEWELRY DESIGN LESSON 7

Considering the metal surfaces used in jewelry design, there are three basic categories of shapes: flat, knife edge and rounded (of varying heights). As illustrated in Figure 7-1, a simple rectangular line drawing can be "shaped" with the use of shading. In addition, a number of surface textures, or finishes, are used, e.g., smooth, florentine (Figure 7-2A), satin (Figure 7-2B) and tree bark (Figure 7-2C). These, too, may be illustrated with shading.

II. Equipment and Techniques

The pencil point should be dulled or flattened. Some designers prefer a softer lead; however, except for a few larger areas, the 4H lead will give satisfactory results. As mentioned earlier, it may have a tendency to be scratchy on the bond paper, so try to confine your shading to the final vellum paper. Feel free, however, to experiment; for example, if you wish to try a regular wood pencil (2B) for shading on bond, do so.

For smoothest results, the pencil should be held lightly and stroked in a direction that follows the contour of the subject. The stroke should start in the shadow and gradually become lighter as it approaches the highlight or lighter areas. Bright or light areas are illustrated by a lack of shading.

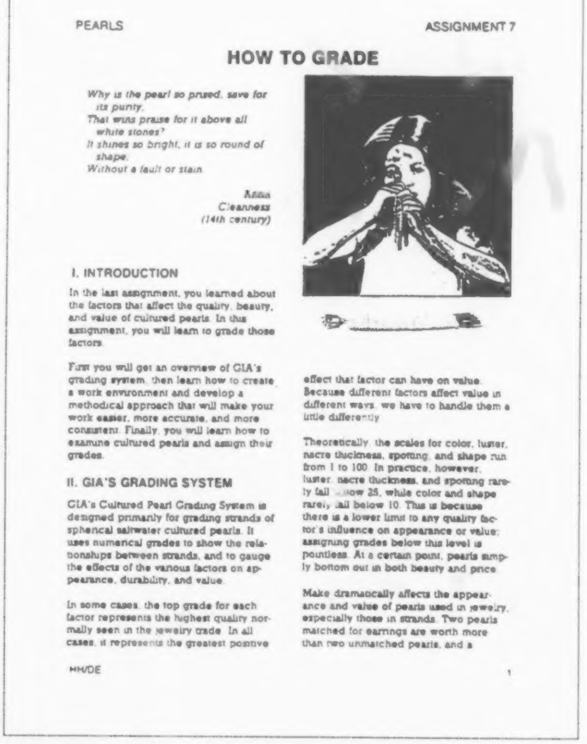
The kneadable eraser is particularly valuable, since it can be used to lighten too-dark shading without spoiling the drawing. This can be accomplished by alternately dabbing and kneading the eraser, so that a fresh surface is exposed. In addition, it may be used to smooth shading that is scratchy in appearance, by shaping and then drawing it over the work from the darkest to the lightest areas. Since the eraser will remove some of the shading, it should be used with a light touch.

The French shading stump, a valuable aid for smoothing shaded areas, should be used very much like a brush. The lead may be worked directly on the darkest shadow areas, then drawn out with the stump; the direction should be from the darkest to the lightest areas, with a lifting motion at the end of a stroke. To achieve a gradation of shadow, the stump must be stroked in one direction, from dark to light; back-and-forth strokes will only even out the shading and should be avoided.

As described in Lesson 4, a small amount of lead can be applied to scrap paper with the pencil, then the fine graphite residue can be picked up and applied to the drawing. Either way, it may be necessary to apply more pencil directly to the deepest shadow areas, to darken them.

The various surface textures of metals may be illustrated in either of two ways. The easiest method is to first shade the surface as if it were smooth, then go over it again with a sharp point and make fine intersecting lines for the florentine finish (Figure 7-2A) and tiny dots for the satin

-3-



PEARLS ASSIGNMENT 7

HOW TO GRADE

Why is the pearl so prised, save for its purity,
That wins praise for it above all white stones?
It shines so bright, it is so round of shape,
Without a fault or stain.

Anon
Cleanness
(14th century)

I. INTRODUCTION

In the last assignment, you learned about the factors that affect the quality, beauty, and value of cultured pearls. In this assignment, you will learn to grade those factors.

First you will get an overview of GIA's grading system, then learn how to create a work environment and develop a methodical approach that will make your work easier, more accurate, and more consistent. Finally, you will learn how to examine cultured pearls and assign their grades.

II. GIA'S GRADING SYSTEM

GIA's Cultured Pearl Grading System is designed primarily for grading strands of spherical saltwater cultured pearls. It uses numerical grades to show the relationships between strands, and to gauge the effects of the various factors on appearance, durability, and value.

In some cases, the top grade for each factor represents the highest quality normally seen in the jewelry trade. In all cases, it represents the greatest positive effect that factor can have on value. Because different factors affect value in different ways, we have to handle them a little differently.

Theoretically, the scales for color, luster, nacre thickness, spotting, and shape run from 1 to 100. In practice, however, luster, nacre thickness, and spotting rarely fall below 25, while color and shape rarely fall below 10. This is because there is a lower limit to any quality factor's influence on appearance or value; assigning grades below this level is pointless. At a certain point, pearls simply bottom out in both beauty and price.

Make dramatically affects the appearance and value of pearls used in jewelry, especially those in strands. Two pearls matched for earrings are worth more than two unmatched pearls, and a

MH/DE 1

Courtesy: Gemological Institute of America

After

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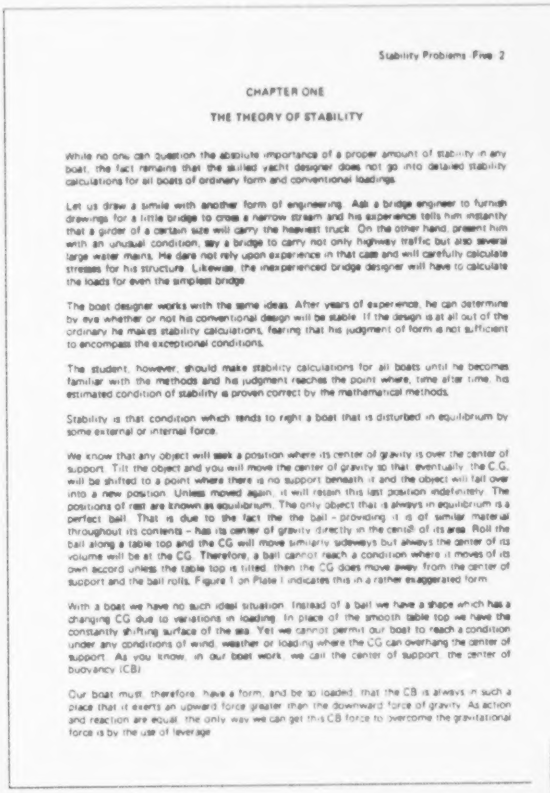


Stability Problems Five 2

CHAPTER ONE

THE THEORY OF STABILITY

While no one can question the absolute importance of a proper amount of stability in any boat, the fact remains that the skilled yacht designer does not go into detailed stability calculations for all boats of ordinary form and conventional loadings.

Let us draw a simile with another form of engineering. Ask a bridge engineer to furnish drawings for a little bridge to cross a narrow stream and his experience tells him instantly that a girder of a certain size will carry the heaviest truck. On the other hand, present him with an unusual condition, say a bridge to carry not only highway traffic but also several large water mains. He dare not rely upon experience in that case and will carefully calculate stresses for his structure. Likewise, the inexperienced bridge designer will have to calculate the loads for even the simplest bridge.

The boat designer works with the same ideas. After years of experience, he can determine by eye whether or not his conventional design will be stable. If the design is at all out of the ordinary he makes stability calculations, fearing that his judgment of form is not sufficient to encompass the exceptional conditions.

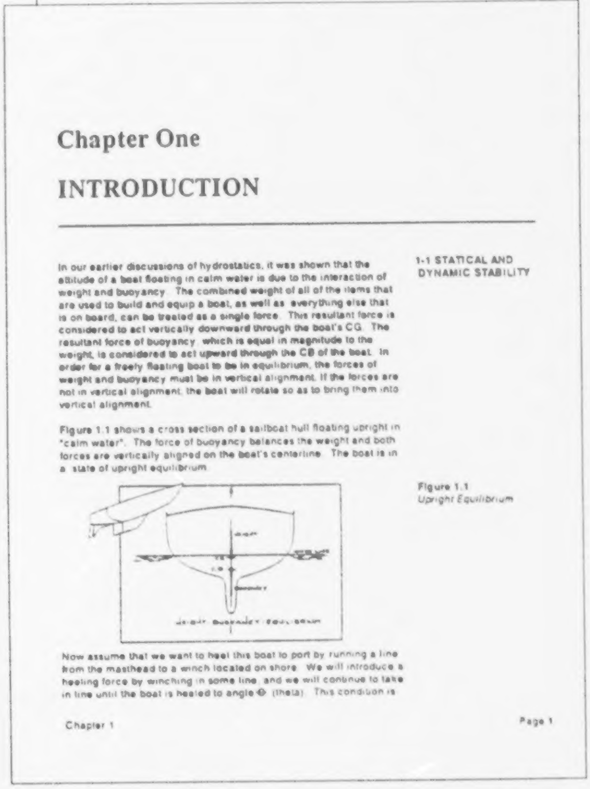
The student, however, should make stability calculations for all boats until he becomes familiar with the methods and his judgment reaches the point where, time after time, his estimated condition of stability is proven correct by the mathematical methods.

Stability is that condition which tends to right a boat that is disturbed in equilibrium by some external or internal force.

We know that any object will seek a position where its center of gravity is over the center of support. Tilt the object and you will move the center of gravity so that, eventually, the C.G. will be shifted to a point where there is no support beneath it and the object will fall over into a new position. Unless moved again, it will retain this last position indefinitely. The positions of rest are known as equilibrium. The only object that is always in equilibrium is a perfect ball. That is due to the fact the the ball – providing it is of similar material throughout its contents – has its center of gravity directly in the center of its area. Roll the ball along a table top and the CG will move similarly sideways but always the center of its volume will be at the CG. Therefore, a ball cannot reach a condition where it moves of its own accord unless the table top is tilted, then the CG does move away from the center of support and the ball rolls. Figure 1 on Plate I indicates this in a rather exaggerated form.

With a boat we have no such ideal situation. Instead of a ball we have a shape which has a changing CG due to variations in loading. In place of the smooth table top we have the constantly shifting surface of the sea. Yet we cannot permit our boat to reach a condition under any conditions of wind, weather or loading where the CG can overhang the center of support. As you know, in our boat work, we call the center of support, the center of buoyancy (CB).

Our boat must, therefore, have a form, and be so loaded, that the CB is always in such a place that it exerts an upward force greater than the downward force of gravity. As action and reaction are equal, the only way we can get this CB force to overcome the gravitational force is by the use of leverage.



Chapter One

INTRODUCTION

1-1 STATICAL AND DYNAMIC STABILITY

In our earlier discussions of hydrostatics, it was shown that the attitude of a boat floating in calm water is due to the interaction of weight and buoyancy. The combined weight of all of the items that are used to build and equip a boat, as well as everything else that is on board, can be treated as a single force. This resultant force is considered to act vertically downward through the boat's CG. The resultant force of buoyancy, which is equal in magnitude to the weight, is considered to act upward through the CB of the boat. In order for a freely floating boat to be in equilibrium, the forces of weight and buoyancy must be in vertical alignment. If the forces are not in vertical alignment, the boat will rotate so as to bring them into vertical alignment.

Figure 1.1 shows a cross section of a sailboat hull floating upright in "calm water". The force of buoyancy balances the weight and both forces are vertically aligned on the boat's centerline. The boat is in a state of upright equilibrium.

Figure 1.1
Upright Equilibrium

Now assume that we want to heel this boat to port by running a line from the masthead to a winch located on shore. We will introduce a heeling force by winching in some line, and we will continue to take in line until the boat is heeled to angle Θ (theta). This condition is

Chapter 1

Page 1

Courtesy: Westlawn Institute of Marine Technology

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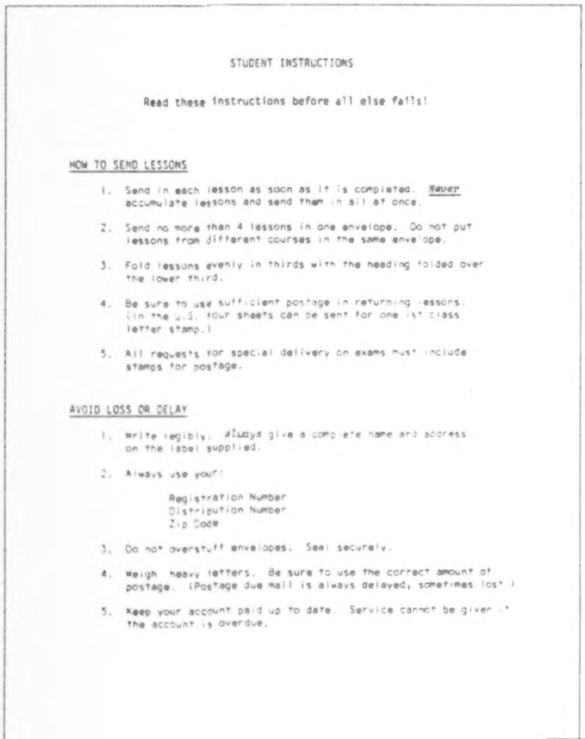


STUDENT INSTRUCTIONS

Read these instructions before all else fails!

HOW TO SEND LESSONS

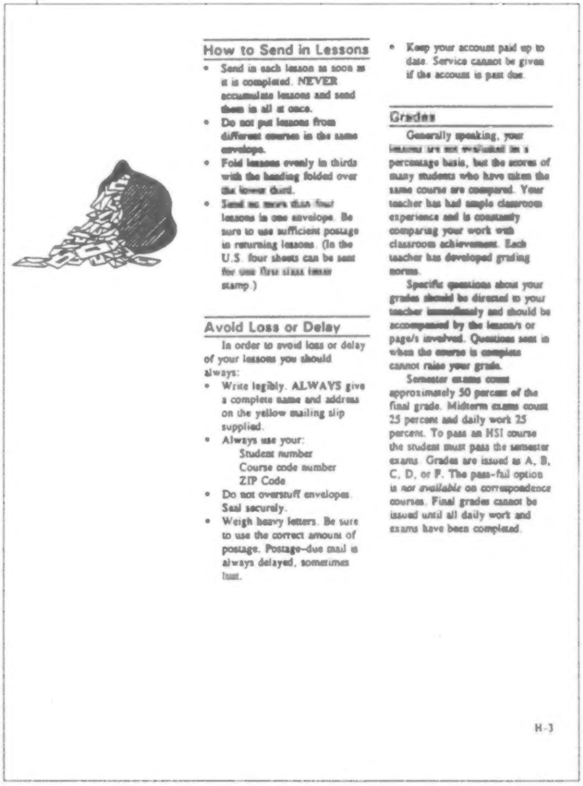
1. Send in each lesson as soon as it is completed. *Never* accumulate lessons and send them in all at once.
2. Send no more than 4 lessons in one envelope. Do not put lessons from different courses in the same envelope.
3. Fold lessons evenly in thirds with the heading folded over the lower third.
4. Be sure to use sufficient postage in returning lessons. (In the U.S. four sheets can be sent for one 1st class letter stamp.)
5. All requests for special delivery on exams must include stamps for postage.

AVOID LOSS OR DELAY

1. Write legibly. *Always* give a complete name and address on the label supplied.
2. Always use your:

   Registration Number
   Distribution Number
   Zip Code
3. Do not overstuff envelopes. Seal securely.
4. Weigh heavy letters. Be sure to use the correct amount of postage. (Postage due mail is always delayed, sometimes lost.)
5. Keep your account paid up to date. Service cannot be given if the account is overdue.

After



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Avoid Loss or Delay

In order to avoid loss or delay of your lessons you should always:

- Write legibly. ALWAYS give a complete name and address on the yellow mailing slip supplied.
- Always use your:
  Student number
  Course code number
  ZIP Code
- Do not overstuff envelopes. Seal securely.
- Weigh heavy letters. Be sure to use the correct amount of postage. Postage-due mail is always delayed, sometimes lost.
- Keep your account paid up to date. Service cannot be given if the account is past due.

Grades

Generally speaking, your lessons are not evaluated on a percentage basis, but the scores of many students who have taken the same course are compared. Your teacher has had ample classroom experience and is constantly comparing your work with classroom achievement. Each teacher has developed grading norms.

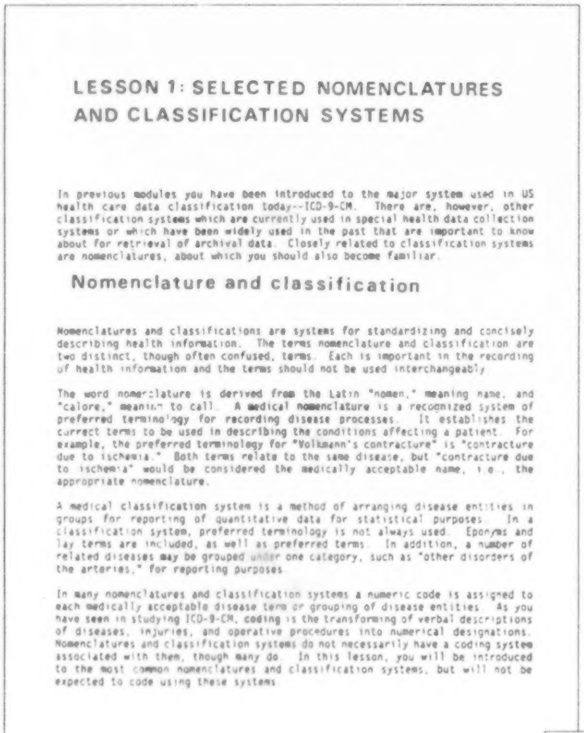
Specific questions about your grades should be directed to your teacher immediately and should be accompanied by the lesson/s or page/s involved. Questions sent in when the course is complete cannot raise your grade.

Semester exams count approximately 50 percent of the final grade. Midterm exams count 25 percent and daily work 25 percent. To pass an HSI course the student must pass the semester exams. Grades are issued as A, B, C, D, or F. The pass-fail option is *not available* on correspondence courses. Final grades cannot be issued until all daily work and exams have been completed.

H-3

Courtesy: Home Study International

Before



LESSON 1: SELECTED NOMENCLATURES AND CLASSIFICATION SYSTEMS

In previous modules you have been introduced to the major system used in US health care data classification today--ICD-9-CM. There are, however, other classification systems which are currently used in special health data collection systems or which have been widely used in the past that are important to know about for retrieval of archival data. Closely related to classification systems are nomenclatures, about which you should also become familiar.

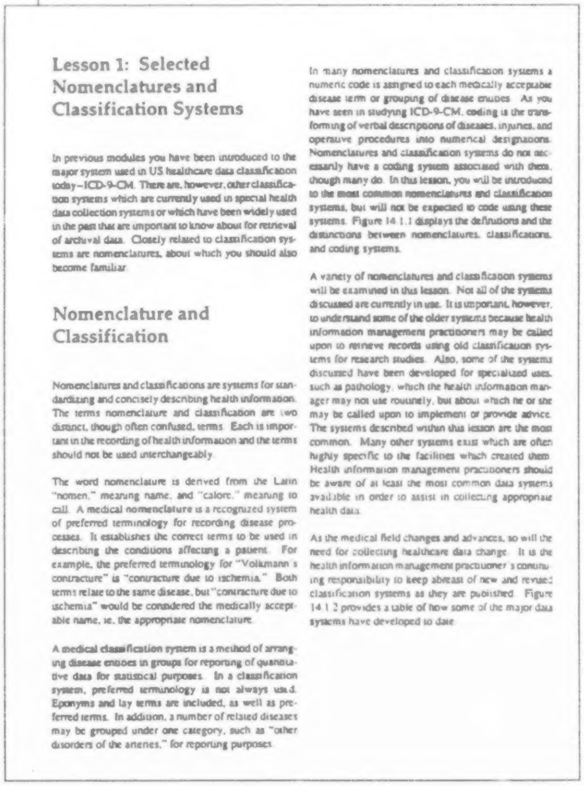
Nomenclature and classification

Nomenclatures and classifications are systems for standardizing and concisely describing health information. The terms nomenclature and classification are two distinct, though often confused, terms. Each is important in the recording of health information and the terms should not be used interchangeably.

The word nomenclature is derived from the Latin "nomen," meaning name, and "calore," meaning to call. A medical nomenclature is a recognized system of preferred terminology for recording disease processes. It establishes the correct terms to be used in describing the conditions affecting a patient. For example, the preferred terminology for "Volkmann's contracture" is "contracture due to ischemia." Both terms relate to the same disease, but "contracture due to ischemia" would be considered the medically acceptable name, i.e., the appropriate nomenclature.

A medical classification system is a method of arranging disease entities in groups for reporting of quantitative data for statistical purposes. In a classification system, preferred terminology is not always used. Eponyms and lay terms are included, as well as preferred terms. In addition, a number of related diseases may be grouped under one category, such as "other disorders of the arteries," for reporting purposes.

In many nomenclatures and classification systems a numeric code is assigned to each medically acceptable disease term or grouping of disease entities. As you have seen in studying ICD-9-CM, coding is the transforming of verbal descriptions of diseases, injuries, and operative procedures into numerical designations. Nomenclatures and classification systems do not necessarily have a coding system associated with them, though many do. In this lesson, you will be introduced to the most common nomenclatures and classification systems, but will not be expected to code using these systems.



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A variety of nomenclatures and classification systems will be examined in this lesson. Not all of the systems discussed are currently in use. It is important, however, to understand some of the older systems because health information management practitioners may be called upon to retrieve records using old classification systems for research studies. Also, some of the systems discussed have been developed for specialized uses, such as pathology, which the health information manager may not use routinely, but about which he or she may be called upon to implement or provide advice. The systems described within this lesson are the most common. Many other systems exist which are often highly specific to the facilities which created them. Health information management practitioners should be aware of at least the most common data systems available in order to assist in collecting appropriate health data.

As the medical field changes and advances, so will the need for collecting healthcare data change. It is the health information management practitioner's continuing responsibility to keep abreast of new and revised classification systems as they are published. Figure 14.1.2 provides a table of how some of the major data systems have developed to date.

Courtesy: American Health Information Management Association

After

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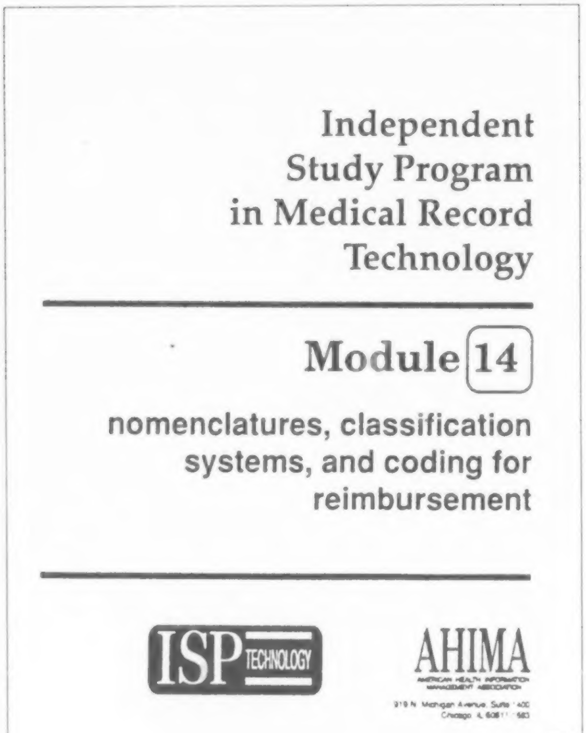


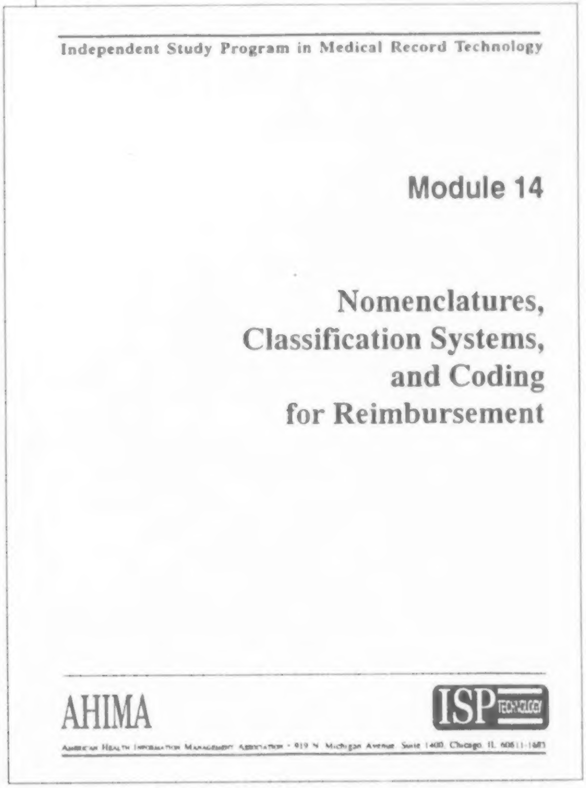
Independent
Study Program
in Medical Record
Technology

Module 14

nomenclatures, classification
systems, and coding for
reimbursement

ISP TECHNOLOGY

AHIMA



Independent Study Program in Medical Record Technology

Module 14

Nomenclatures,
Classification Systems,
and Coding
for Reimbursement

AHIMA

ISP TECHNOLOGY

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Health Information
Management Association

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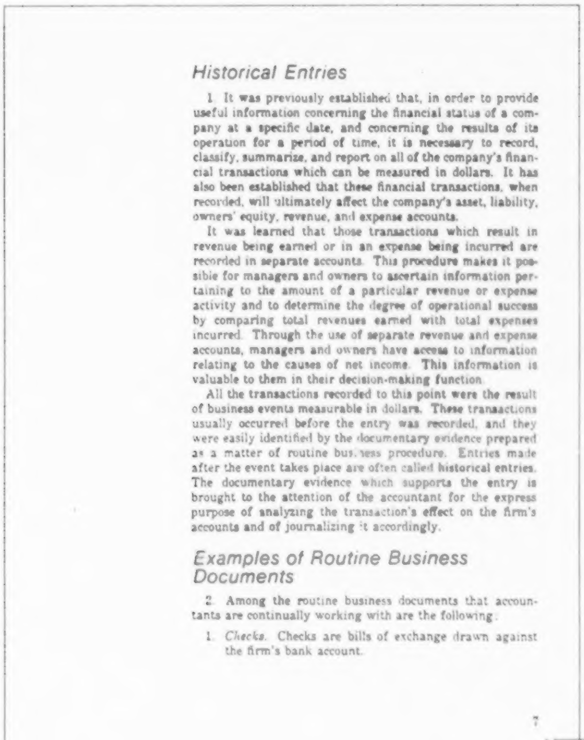


Historical Entries

1. It was previously established that, in order to provide useful information concerning the financial status of a company at a specific date, and concerning the results of its operation for a period of time, it is necessary to record, classify, summarize, and report on all of the company's financial transactions which can be measured in dollars. It has also been established that these financial transactions, when recorded, will ultimately affect the company's asset, liability, owners' equity, revenue, and expense accounts.

It was learned that those transactions which result in revenue being earned or in an expense being incurred are recorded in separate accounts. This procedure makes it possible for managers and owners to ascertain information pertaining to the amount of a particular revenue or expense activity and to determine the degree of operational success by comparing total revenues earned with total expenses incurred. Through the use of separate revenue and expense accounts, managers and owners have access to information relating to the causes of net income. This information is valuable to them in their decision-making function.

All the transactions recorded to this point were the result of business events measurable in dollars. These transactions usually occurred before the entry was recorded, and they were easily identified by the documentary evidence prepared as a matter of routine business procedure. Entries made after the event takes place are often called **historical entries**. The documentary evidence which supports the entry is brought to the attention of the accountant for the express purpose of analyzing the transaction's effect on the firm's accounts and of journalizing it accordingly.

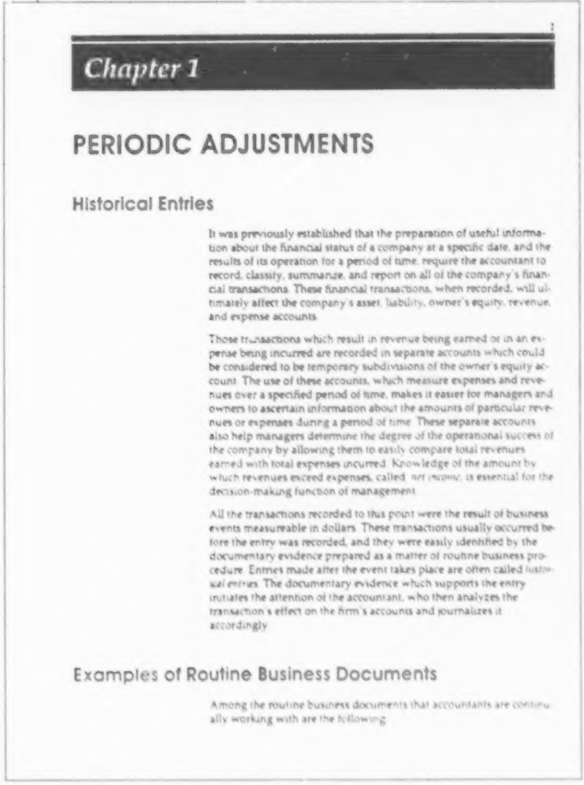
Examples of Routine Business Documents

2. Among the routine business documents that accountants are continually working with are the following:

1. *Checks.* Checks are bills of exchange drawn against the firm's bank account.

7

Before



Chapter 1

PERIODIC ADJUSTMENTS

Historical Entries

It was previously established that the preparation of useful information about the financial status of a company at a specific date, and the results of its operation for a period of time, require the accountant to record, classify, summarize, and report on all of the company's financial transactions. These financial transactions, when recorded, will ultimately affect the company's asset, liability, owner's equity, revenue, and expense accounts.

Those transactions which result in revenue being earned or in an expense being incurred are recorded in separate accounts which could be considered to be temporary subdivisions of the owner's equity account. The use of these accounts, which measure expenses and revenues over a specified period of time, makes it easier for managers and owners to ascertain information about the amounts of particular revenues or expenses during a period of time. These separate accounts also help managers determine the degree of the operational success of the company by allowing them to easily compare total revenues earned with total expenses incurred. Knowledge of the amount by which revenues exceed expenses, called *net income*, is essential for the decision-making function of management.

All the transactions recorded to this point were the result of business events measureable in dollars. These transactions usually occurred before the entry was recorded, and they were easily identified by the documentary evidence prepared as a matter of routine business procedure. Entries made after the event takes place are often called *historical entries*. The documentary evidence which supports the entry initiates the attention of the accountant, who then analyzes the transaction's effect on the firm's accounts and journalizes it accordingly.

Examples of Routine Business Documents

Among the routine business documents that accountants are continually working with are the following:

Courtesy: International Correspondence Schools

After

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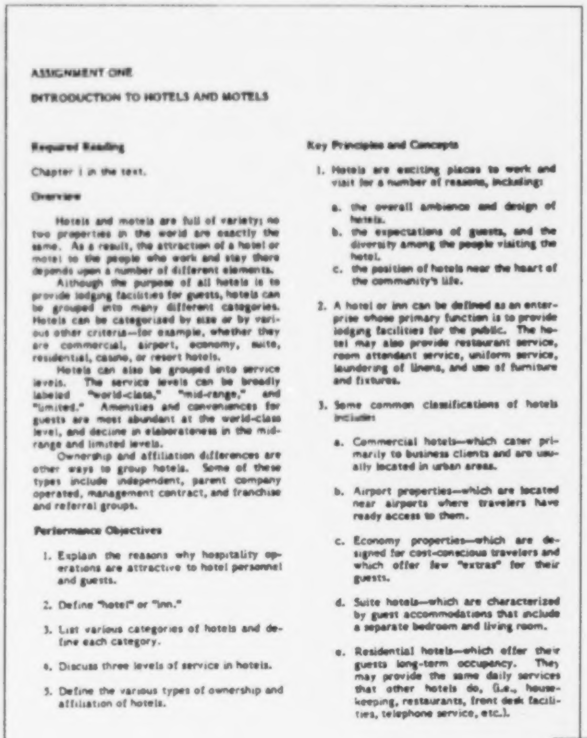
Before



ASSIGNMENT ONE

INTRODUCTION TO HOTELS AND MOTELS

Required Reading

Chapter 1 in the text.

Overview

Hotels and motels are full of variety; no two properties in the world are exactly the same. As a result, the attraction of a hotel or motel to the people who work and stay there depends upon a number of different elements.

Although the purpose of all hotels is to provide lodging facilities for guests, hotels can be grouped into many different categories. Hotels can be categorized by size or by various other criteria—for example, whether they are commercial, airport, economy, suite, residential, casino, or resort hotels.

Hotels can also be grouped into service levels. The service levels can be broadly labeled "world-class," "mid-range," and "limited." Amenities and conveniences for guests are most abundant at the world-class level, and decline in elaborateness in the mid-range and limited levels.

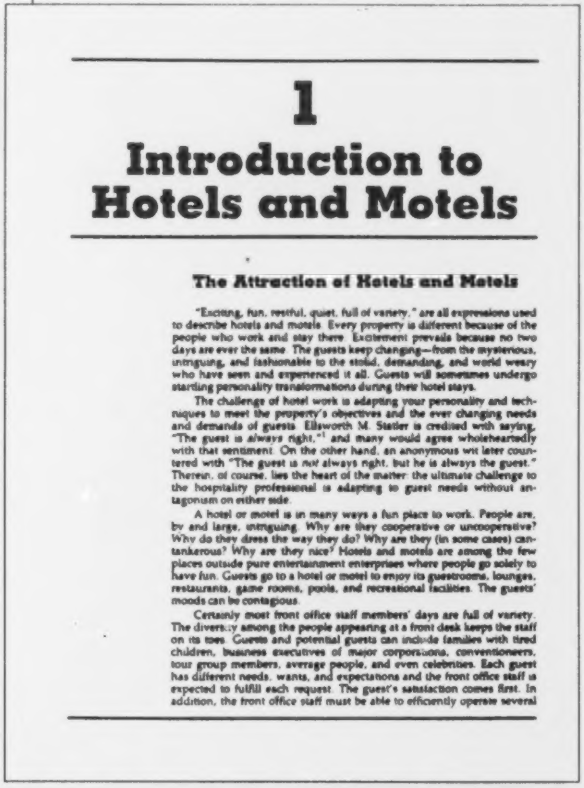
Ownership and affiliation differences are other ways to group hotels. Some of these types include independent, parent company operated, management contract, and franchise and referral groups.

Performance Objectives

1. Explain the reasons why hospitality operations are attractive to hotel personnel and guests.
2. Define "hotel" or "inn."
3. List various categories of hotels and define each category.
4. Discuss three levels of service in hotels.
5. Define the various types of ownership and affiliation of hotels.

Key Principles and Concepts

1. Hotels are exciting places to work and visit for a number of reasons, including:
   a. the overall ambience and design of hotels.
   b. the expectations of guests, and the diversity among the people visiting the hotel.
   c. the position of hotels near the heart of the community's life.
2. A hotel or inn can be defined as an enterprise whose primary function is to provide lodging facilities for the public. The hotel may also provide restaurant service, room attendant service, uniform service, laundering of linens, and use of furniture and fixtures.
3. Some common classifications of hotels include:
   a. Commercial hotels—which cater primarily to business clients and are usually located in urban areas.
   b. Airport properties—which are located near airports where travelers have ready access to them.
   c. Economy properties—which are designed for cost-conscious travelers and which offer few "extras" for their guests.
   d. Suite hotels—which are characterized by guest accommodations that include a separate bedroom and living room.
   e. Residential hotels—which offer their guests long-term occupancy. They may provide the same daily services that other hotels do, (i.e., housekeeping, restaurants, front desk facilities, telephone service, etc.).



1

Introduction to Hotels and Motels

The Attraction of Hotels and Motels

"Exciting, fun, restful, quiet, full of variety," are all expressions used to describe hotels and motels. Every property is different because of the people who work and stay there. Excitement prevails because no two days are ever the same. The guests keep changing—from the mysterious, intriguing, and fashionable to the stolid, demanding, and world weary who have seen and experienced it all. Guests will sometimes undergo startling personality transformations during their hotel stays.

The challenge of hotel work is adapting your personality and techniques to meet the property's objectives and the ever changing needs and demands of guests. Ellsworth M. Statler is credited with saying, "The guest is *always* right,"[1] and many would agree wholeheartedly with that sentiment. On the other hand, an anonymous wit later countered with "The guest is *not* always right, but he is always the guest." Therein, of course, lies the heart of the matter: the ultimate challenge to the hospitality professional is adapting to guest needs without antagonism on either side.

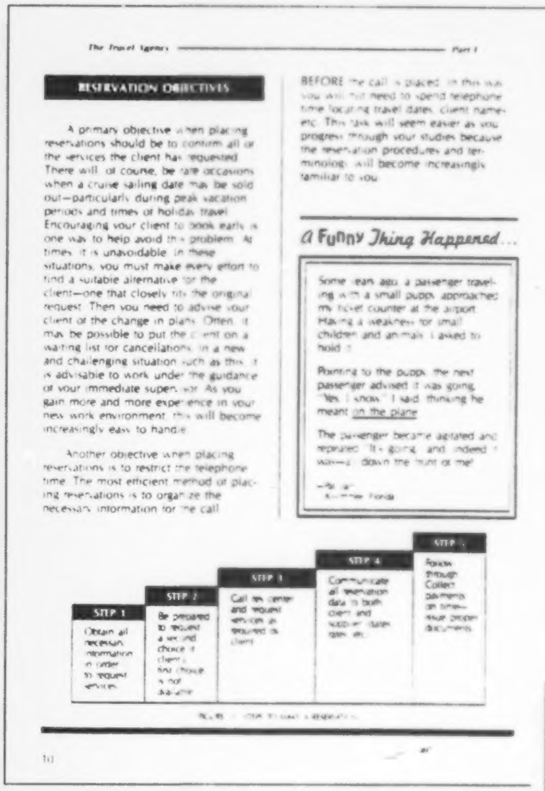
A hotel or motel is in many ways a fun place to work. People are, by and large, intriguing. Why are they cooperative or uncooperative? Why do they dress the way they do? Why are they (in some cases) cantankerous? Why are they nice? Hotels and motels are among the few places outside pure entertainment enterprises where people go solely to have fun. Guests go to a hotel or motel to enjoy its guestrooms, lounges, restaurants, game rooms, pools, and recreational facilities. The guests' moods can be contagious.

Certainly most front office staff members' days are full of variety. The diversity among the people appearing at a front desk keeps the staff on its toes. Guests and potential guests can include families with tired children, business executives of major corporations, conventioneers, tour group members, average people, and even celebrities. Each guest has different needs, wants, and expectations and the front office staff is expected to fulfill each request. The guest's satisfaction comes first. In addition, the front office staff must be able to efficiently operate several

Courtesy: Educational Institute of American Hotel and Motel Association

After

Samples of Great Looking Courses



The Travel Agency — *Part I*

RESERVATION OBJECTIVES

A primary objective when placing reservations should be to confirm all of the services the client has requested. There will, of course, be rare occasions when a cruise sailing date may be sold out—particularly during peak vacation periods and times of holiday travel. Encouraging your client to book early is one way to help avoid this problem. At times, it is unavoidable. In these situations, you must make every effort to find a suitable alternative for the client—one that closely fits the original request. Then you need to advise your client of the change in plans. Often, it may be possible to put the client on a waiting list for cancellations. In a new and challenging situation such as this, it is advisable to work under the guidance of your immediate supervisor. As you gain more and more experience in your new work environment, this will become increasingly easy to handle.

Another objective when placing reservations is to restrict the telephone time. The most efficient method of placing reservations is to organize the necessary information for the call BEFORE the call is placed. In this way you will not need to spend telephone time locating travel dates, client names, etc. This task will seem easier as you progress through your studies because the reservation procedures and terminology will become increasingly familiar to you.

A Funny Thing Happened…

Some years ago, a passenger traveling with a small puppy approached my ticket counter at the airport. Having a weakness for small children and animals, I asked to hold it.

Pointing to the puppy, the next passenger advised it was going. "Yes, I know," I said, thinking he meant on the plane.

The passenger became agitated and repeated, "It's going," and indeed it was—all down the front of me!

STEP 1
Obtain all necessary information in order to request services

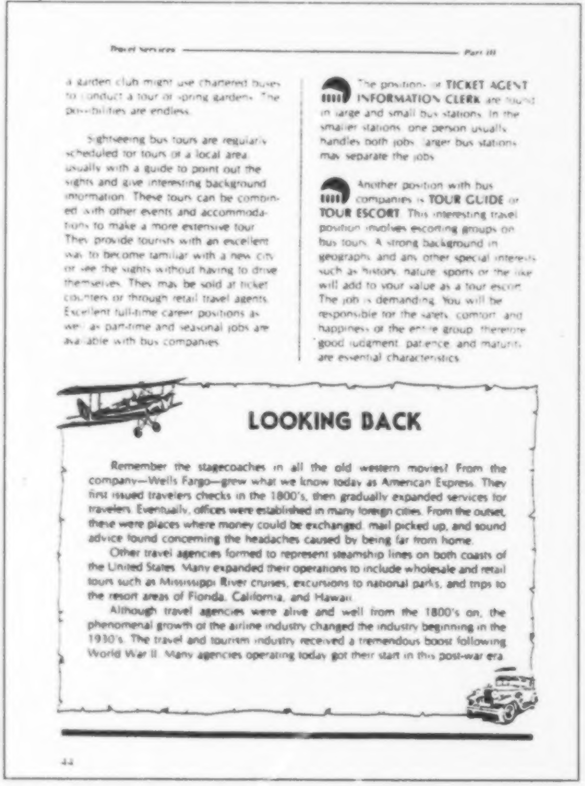
STEP 2
Be prepared to request a second choice if client's first choice is not available

STEP 3
Call res center and request services as required by client

STEP 4
Communicate all reservation data to both client and supplier (dates, rates, etc.)

STEP 5
Follow through. Collect payments on time—issue proper documents

10



Travel Services — *Part III*

a garden club might use chartered buses to conduct a tour of spring gardens. The possibilities are endless.

Sightseeing bus tours are regularly scheduled for tours of a local area, usually with a guide to point out the sights and give interesting background information. These tours can be combined with other events and accommodations to make a more extensive tour. They provide tourists with an excellent way to become familiar with a new city or see the sights without having to drive themselves. They may be sold at ticket counters or through retail travel agents. Excellent full-time career positions as well as part-time and seasonal jobs are available with bus companies.

The positions of **TICKET AGENT** and **INFORMATION CLERK** are found in large and small bus stations. In the smaller stations, one person usually handles both jobs. Larger bus stations may separate the jobs.

Another position with bus companies is **TOUR GUIDE** or **TOUR ESCORT**. This interesting travel position involves escorting groups on bus tours. A strong background in geography and any other special interests such as history, nature, sports or the like will add to your value as a tour escort. The job is demanding. You will be responsible for the safety, comfort, and happiness of the entire group; therefore good judgment, patience, and maturity are essential characteristics.

LOOKING BACK

Remember the stagecoaches in all the old western movies? From the company—Wells Fargo—grew what we know today as American Express. They first issued travelers checks in the 1800's, then gradually expanded services for travelers. Eventually, offices were established in many foreign cities. From the outset, these were places where money could be exchanged, mail picked up, and sound advice found concerning the headaches caused by being far from home.

Other travel agencies formed to represent steamship lines on both coasts of the United States. Many expanded their operations to include wholesale and retail tours such as Mississippi River cruises, excursions to national parks, and trips to the resort areas of Florida, California, and Hawaii.

Although travel agencies were alive and well from the 1800's on, the phenomenal growth of the airline industry changed the industry beginning in the 1930's. The travel and tourism industry received a tremendous boost following World War II. Many agencies operating today got their start in this post-war era.

44

Courtesy: Southeastern Academy

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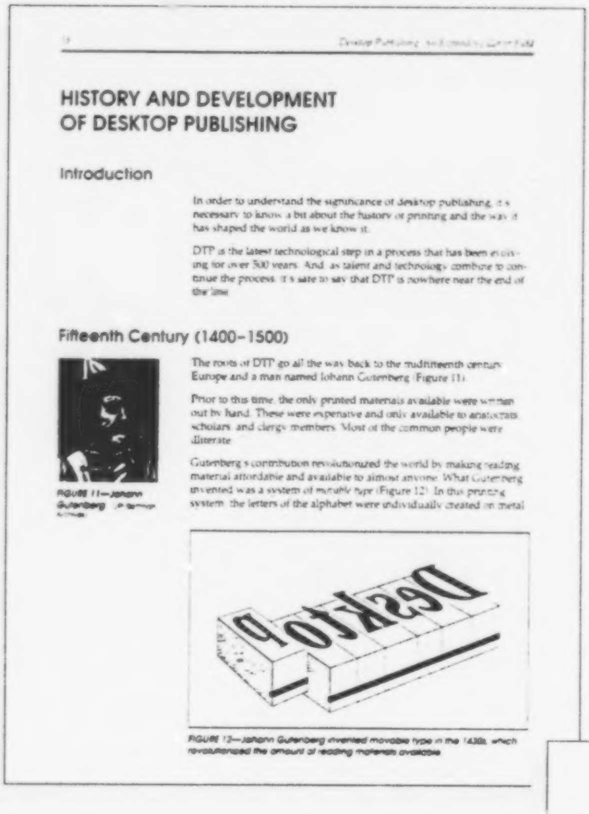


18 Desktop Publishing: An Exciting Career Field

HISTORY AND DEVELOPMENT OF DESKTOP PUBLISHING

Introduction

In order to understand the significance of desktop publishing, it's necessary to know a bit about the history of printing and the way it has shaped the world as we know it.

DTP is the latest technological step in a process that has been evolving for over 500 years. And, as talent and technology combine to continue the process, it's safe to say that DTP is nowhere near the end of the line.

Fifteenth Century (1400–1500)

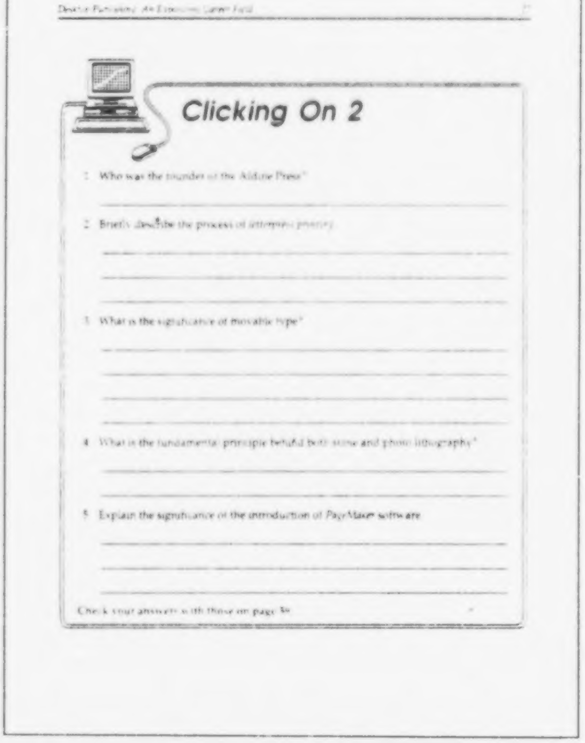
The roots of DTP go all the way back to the midfifteenth century Europe and a man named Johann Gutenberg (Figure 11).

Prior to this time, the only printed materials available were written out by hand. These were expensive and only available to aristocrats, scholars, and clergy members. Most of the common people were illiterate.

Gutenberg's contribution revolutionized the world by making reading material affordable and available to almost anyone. What Gutenberg invented was a system of *movable type* (Figure 12). In this printing system, the letters of the alphabet were individually created on metal

FIGURE 11—Johann Gutenberg [illegible]

FIGURE 12—Johann Gutenberg invented movable type in the 1430s, which revolutionized the amount of reading materials available.



Desktop Publishing: An Exciting Career Field 17

Clicking On 2

1. Who was the founder of the Aldine Press?

2. Briefly describe the process of letterpress printing.

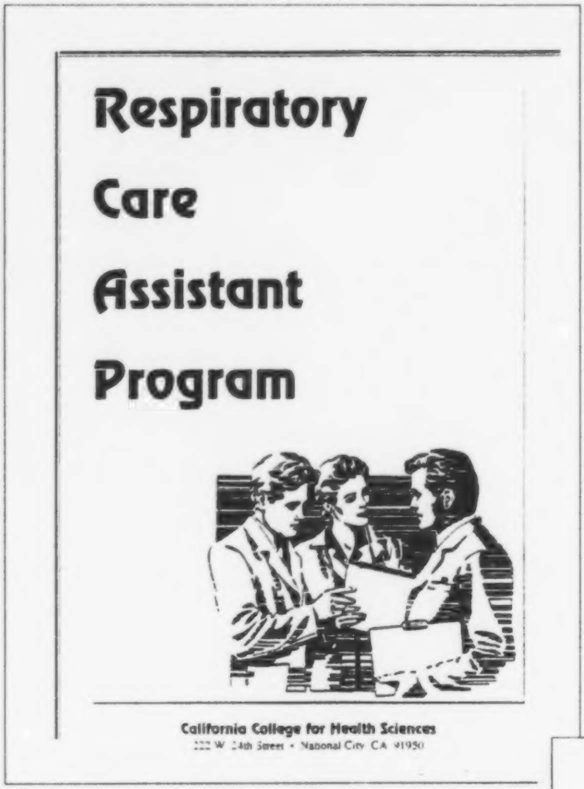
3. What is the significance of movable type?

4. What is the fundamental principle behind both stone and photo lithography?

5. Explain the significance of the introduction of *PageMaker* software.

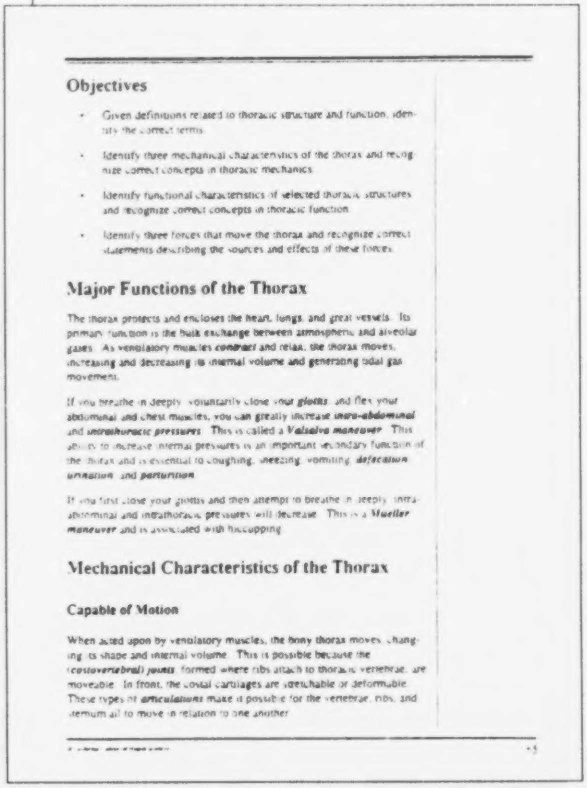
Check your answers with those on page 38.

Courtesy: International Correspondence Schools



Respiratory Care Assistant Program

California College for Health Sciences
222 W. 24th Street • National City, CA 91950



Objectives

- Given definitions related to thoracic structure and function, identify the correct terms.
- Identify three mechanical characteristics of the thorax and recognize correct concepts in thoracic mechanics.
- Identify functional characteristics of selected thoracic structures and recognize correct concepts in thoracic function.
- Identify three forces that move the thorax and recognize correct statements describing the sources and effects of these forces.

Major Functions of the Thorax

The thorax protects and encloses the heart, lungs, and great vessels. Its primary function is the bulk exchange between atmospheric and alveolar gases. As ventilatory muscles ***contract*** and relax, the thorax moves, increasing and decreasing its internal volume and generating tidal gas movement.

If you breathe in deeply, voluntarily close your ***glottis***, and flex your abdominal and chest muscles, you can greatly increase ***intra-abdominal*** and ***intrathoracic pressures***. This is called a ***Valsalva maneuver***. This ability to increase internal pressures is an important secondary function of the thorax and is essential to coughing, sneezing, vomiting, ***defecation***, ***urination***, and ***parturition***.

If you first close your glottis and then attempt to breathe in deeply, intra-abdominal and intrathoracic pressures will decrease. This is a ***Mueller maneuver*** and is associated with hiccupping.

Mechanical Characteristics of the Thorax

Capable of Motion

When acted upon by ventilatory muscles, the bony thorax moves, changing its shape and internal volume. This is possible because the (***costovertebral) joints***, formed where ribs attach to thoracic vertebrae, are moveable. In front, the costal cartilages are stretchable or deformable. These types of ***articulations*** make it possible for the vertebrae, ribs, and sternum all to move in relation to one another.

Courtesy: California College for Health Sciences

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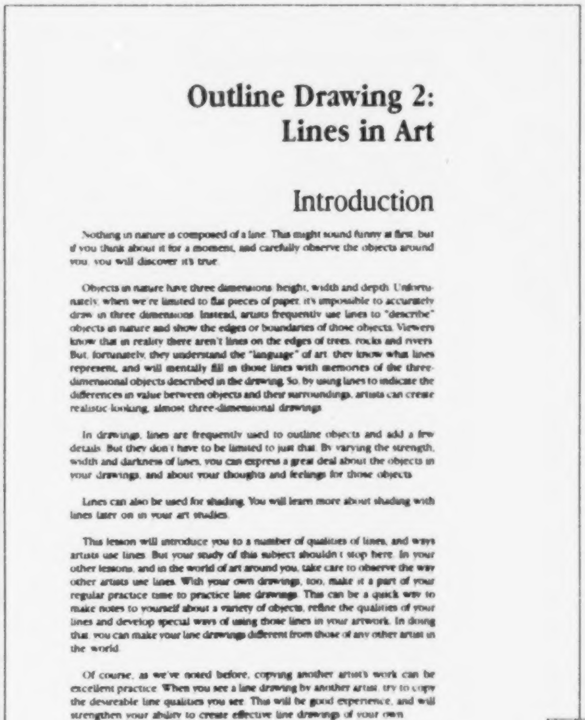


Outline Drawing 2: Lines in Art

Introduction

Nothing in nature is composed of a line. This might sound funny at first, but if you think about it for a moment, and carefully observe the objects around you, you will discover it's true.

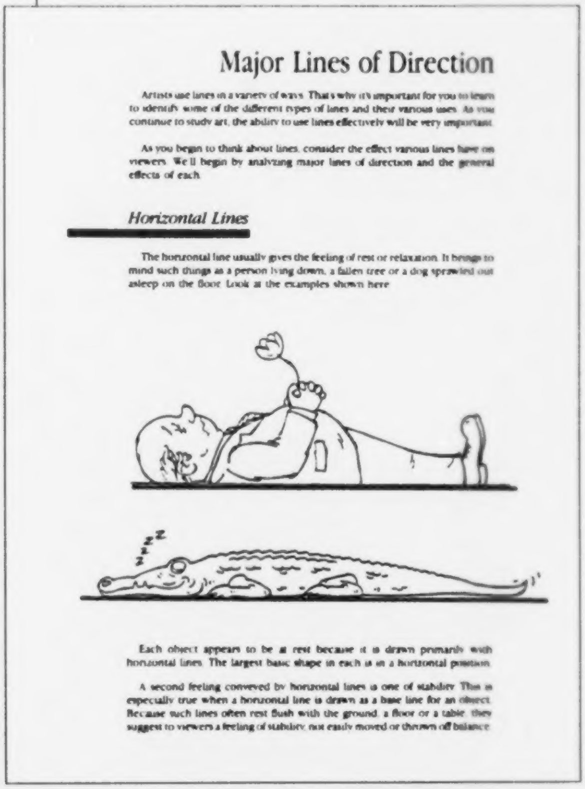
Objects in nature have three dimensions: height, width and depth. Unfortunately, when we're limited to flat pieces of paper, it's impossible to accurately draw in three dimensions. Instead, artists frequently use lines to "describe" objects in nature and show the edges or boundaries of those objects. Viewers know that in reality there aren't lines on the edges of trees, rocks and rivers. But, fortunately, they understand the "language" of art: they know what lines represent, and will mentally fill in those lines with memories of the three-dimensional objects described in the drawing. So, by using lines to indicate the differences in value between objects and their surroundings, artists can create realistic-looking, almost three-dimensional drawings.

In drawings, lines are frequently used to outline objects and add a few details. But they don't have to be limited to just that. By varying the strength, width and darkness of lines, you can express a great deal about the objects in your drawings, and about your thoughts and feelings for those objects.

Lines can also be used for shading. You will learn more about shading with lines later on in your art studies.

This lesson will introduce you to a number of qualities of lines, and ways artists use lines. But your study of this subject shouldn't stop here. In your other lessons, and in the world of art around you, take care to observe the way other artists use lines. With your own drawings, too, make it a part of your regular practice time to practice line drawings. This can be a quick way to make notes to yourself about a variety of objects, refine the qualities of your lines and develop special ways of using those lines in your artwork. In doing that, you can make your line drawings different from those of any other artist in the world.

Of course, as we've noted before, copying another artist's work can be excellent practice. When you see a line drawing by another artist, try to copy the desireable line qualities you see. This will be good experience, and will strengthen your ability to create effective line drawings of your own.



Major Lines of Direction

Artists use lines in a variety of ways. That's why it's important for you to learn to identify some of the different types of lines and their various uses. As you continue to study art, the ability to use lines effectively will be very important.

As you begin to think about lines, consider the effect various lines have on viewers. We'll begin by analyzing major lines of direction and the general effects of each.

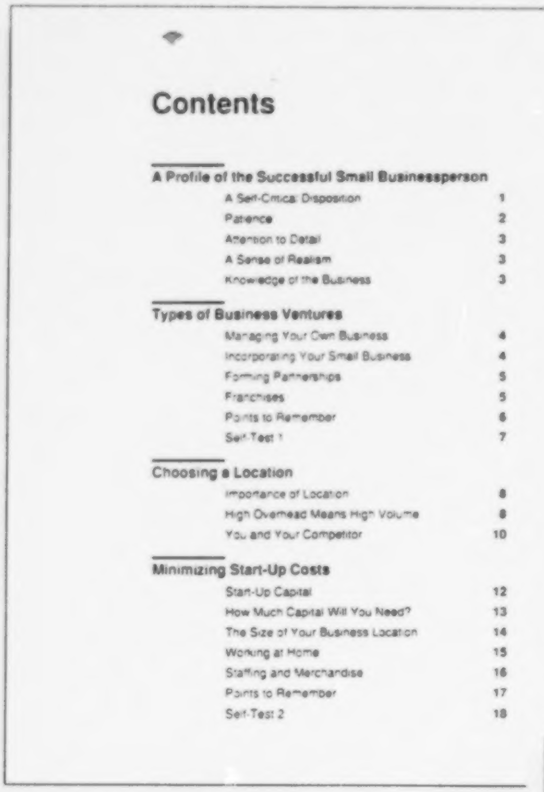
Horizontal Lines

The horizontal line usually gives the feeling of rest or relaxation. It brings to mind such things as a person lying down, a fallen tree or a dog sprawled out asleep on the floor. Look at the examples shown here.

Each object appears to be at rest because it is drawn primarily with horizontal lines. The largest basic shape in each is in a horizontal position.

A second feeling conveyed by horizontal lines is one of stability. This is especially true when a horizontal line is drawn as a base line for an object. Because such lines often rest flush with the ground, a floor or a table, they suggest to viewers a feeling of stability, not easily moved or thrown off balance.

Courtesy: Art Instruction Schools



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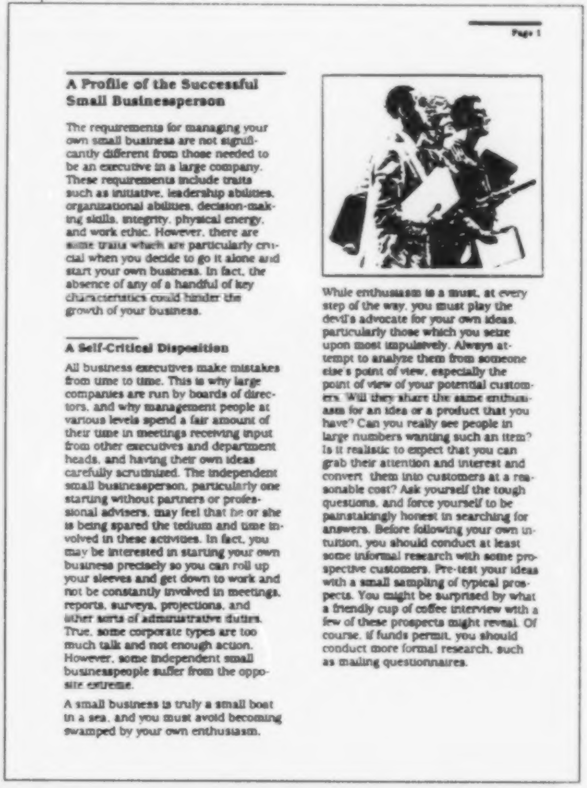

A Profile of the Successful Small Businessperson

The requirements for managing your own small business are not significantly different from those needed to be an executive in a large company. These requirements include traits such as initiative, leadership abilities, organizational abilities, decision-making skills, integrity, physical energy, and work ethic. However, there are some traits which are particularly critical when you decide to go it alone and start your own business. In fact, the absence of any of a handful of key characteristics could hinder the growth of your business.

A Self-Critical Disposition

All business executives make mistakes from time to time. This is why large companies are run by boards of directors, and why management people at various levels spend a fair amount of their time in meetings receiving input from other executives and department heads, and having their own ideas carefully scrutinized. The independent small businessperson, particularly one starting without partners or professional advisers, may feel that he or she is being spared the tedium and time involved in these activities. In fact, you may be interested in starting your own business precisely so you can roll up your sleeves and get down to work and not be constantly involved in meetings, reports, surveys, projections, and other sorts of administrative duties. True, some corporate types are too much talk and not enough action. However, some independent small businesspeople suffer from the opposite extreme.

A small business is truly a small boat in a sea, and you must avoid becoming swamped by your own enthusiasm. While enthusiasm is a must, at every step of the way, you must play the devil's advocate for your own ideas, particularly those which you seize upon most impulsively. Always attempt to analyze them from someone else's point of view, especially the point of view of your potential customers. Will they share the same enthusiasm for an idea or a product that you have? Can you really see people in large numbers wanting such an item? Is it realistic to expect that you can grab their attention and interest and convert them into customers at a reasonable cost? Ask yourself the tough questions, and force yourself to be painstakingly honest in searching for answers. Before following your own intuition, you should conduct at least some informal research with some prospective customers. Pre-test your ideas with a small sampling of typical prospects. You might be surprised by what a friendly cup of coffee interview with a few of these prospects might reveal. Of course, if funds permit, you should conduct more formal research, such as mailing questionnaires.

Courtesy: Lifetime Career Schools

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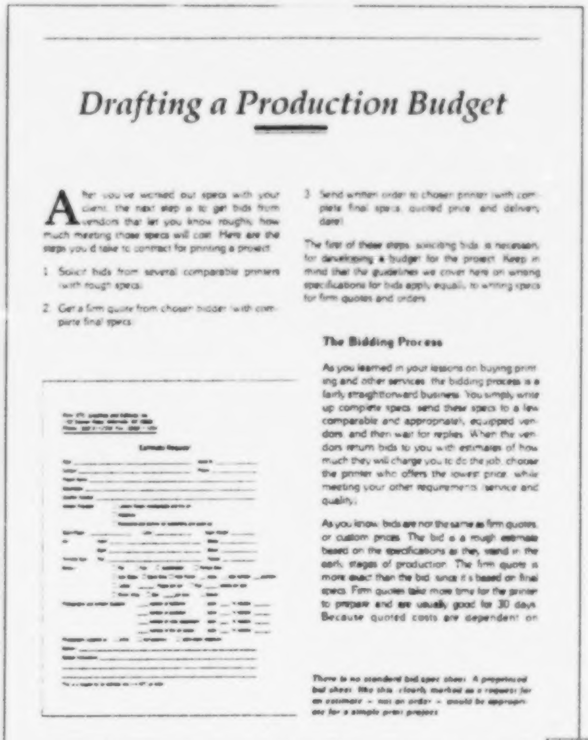


Drafting a Production Budget

After you've worked out specs with your client, the next step is to get bids from vendors that let you know roughly how much meeting those specs will cost. Here are the steps you'd take to contract for printing a project:

1. Solicit bids from several comparable printers (with rough specs).
2. Get a firm quote from chosen bidder (with complete final specs).
3. Send written order to chosen printer (with complete final specs, quoted price, and delivery date).

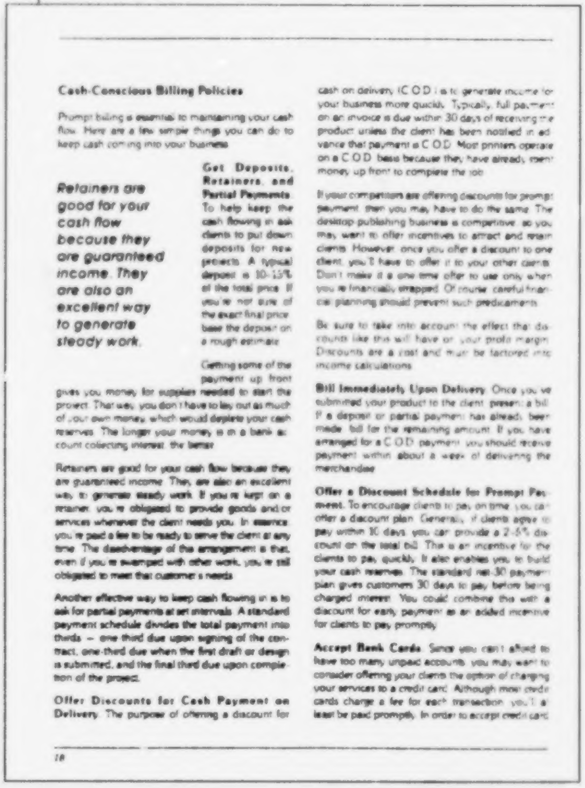
The first of these steps, soliciting bids, is necessary for developing a budget for the project. Keep in mind that the guidelines we cover here on writing specifications for bids apply equally to writing specs for firm quotes and orders.

The Bidding Process

As you learned in your lessons on buying printing and other services, the bidding process is a fairly straightforward business. You simply write up complete specs, send these specs to a few comparable and appropriately equipped vendors, and then wait for replies. When the vendors return bids to you with estimates of how much they will charge you to do the job, choose the printer who offers the lowest price, while meeting your other requirements (service and quality).

As you know, bids are not the same as firm quotes or custom prices. The bid is a rough estimate based on the specifications as they stand in the early stages of production. The firm quote is more exact than the bid, since it's based on final specs. Firm quotes take more time for the printer to prepare and are usually good for 30 days. Because quoted costs are dependent on

There is no standard bid spec sheet. A preprinted bid sheet like this, clearly marked as a request for an estimate — not an order — would be appropriate for a simple print project.



Cash-Conscious Billing Policies

Prompt billing is essential to maintaining your cash flow. Here are a few simple things you can do to keep cash coming into your business.

Retainers are good for your cash flow because they are guaranteed income. They are also an excellent way to generate steady work.

Get Deposits, Retainers, and Partial Payments. To help keep the cash flowing in, ask clients to put down deposits for new projects. A typical deposit is 10-15% of the total price. If you're not sure of the exact final price, base the deposit on a rough estimate.

Getting some of the payment up front gives you money for supplies needed to start the project. That way, you don't have to lay out as much of your own money, which would deplete your cash reserves. The longer your money is in a bank account collecting interest, the better.

Retainers are good for your cash flow because they are guaranteed income. They are also an excellent way to generate steady work. If you're kept on a retainer, you're obligated to provide goods and/or services whenever the client needs you. In essence, you're paid a fee to be ready to serve the client at any time. The disadvantage of the arrangement is that, even if you're swamped with other work, you're still obligated to meet that customer's needs.

Another effective way to keep cash flowing in is to ask for partial payments at set intervals. A standard payment schedule divides the total payment into thirds — one third due upon signing of the contract, one-third due when the first draft or design is submitted, and the final third due upon completion of the project.

Offer Discounts for Cash Payment on Delivery. The purpose of offering a discount for cash on delivery (C.O.D.) is to generate income for your business more quickly. Typically, full payment on an invoice is due within 30 days of receiving the product unless the client has been notified in advance that payment is C.O.D. Most printers operate on a C.O.D. basis because they have already spent money up front to complete the job.

If your competitors are offering discounts for prompt payment, then you may have to do the same. The desktop publishing business is competitive, so you may want to offer incentives to attract and retain clients. However, once you offer a discount to one client, you'll have to offer it to your other clients. Don't make it a one time offer to use only when you're financially strapped. Of course, careful financial planning should prevent such predicaments.

Be sure to take into account the effect that discounts like this will have on your profit margin. Discounts are a cost and must be factored into income calculations.

Bill Immediately Upon Delivery. Once you've submitted your product to the client, present a bill. If a deposit or partial payment has already been made, bill for the remaining amount. If you have arranged for a C.O.D. payment, you should receive payment within about a week of delivering the merchandise.

Offer a Discount Schedule for Prompt Payment. To encourage clients to pay on time, you can offer a discount plan. Generally, if clients agree to pay within 10 days, you can provide a 2-5% discount on the total bill. This is an incentive for the clients to pay quickly. It also enables you to build your cash reserves. The standard net-30 payment plan gives customers 30 days to pay before being charged interest. You could combine this with a discount for early payment as an added incentive for clients to pay promptly.

Accept Bank Cards. Since you can't afford to have too many unpaid accounts, you may want to consider offering your clients the option of charging your services to a credit card. Although most credit cards charge a fee for each transaction, you'll at least be paid promptly. In order to accept credit card

Courtesy: McGraw-Hill Continuing Education Center/NRI Schools

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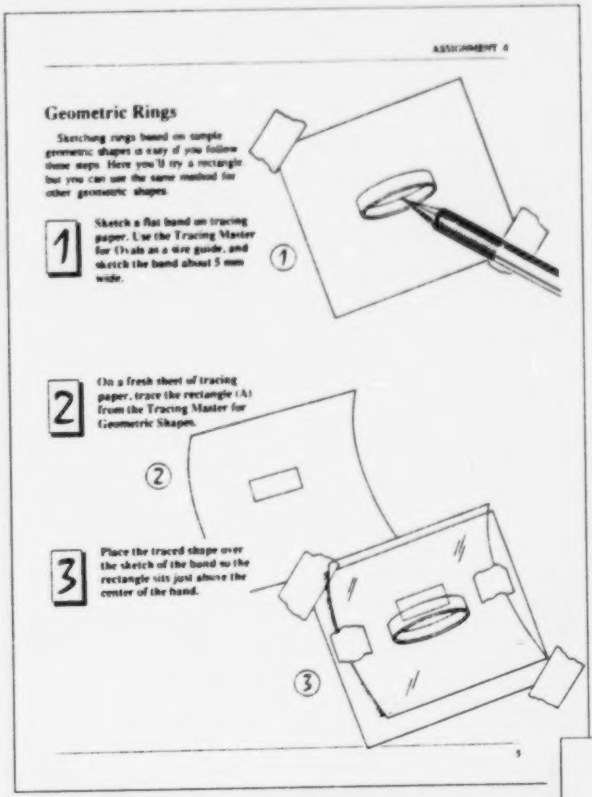


ASSIGNMENT 4

Geometric Rings

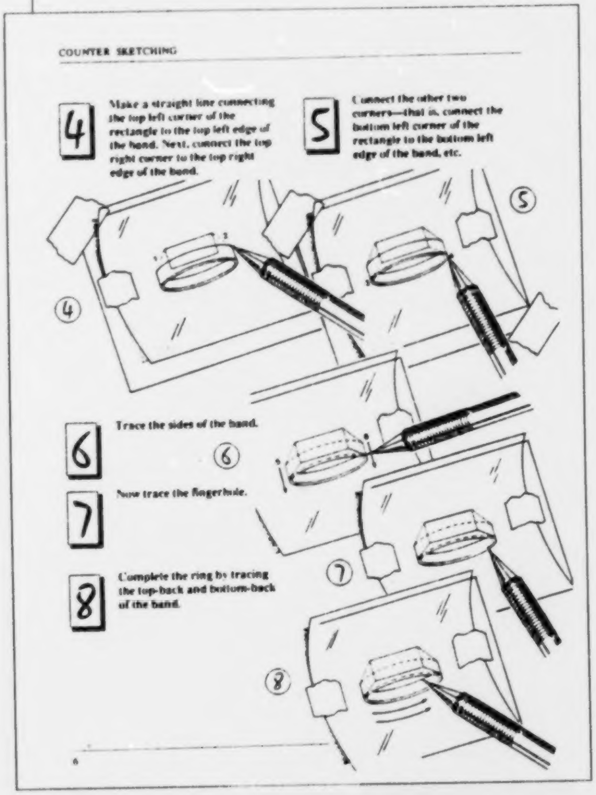
Sketching rings based on simple geometric shapes is easy if you follow these steps. Here you'll try a rectangle, but you can use the same method for other geometric shapes.

1 Sketch a flat band on tracing paper. Use the Tracing Master for Ovals as a size guide, and sketch the band about 5 mm wide.

2 On a fresh sheet of tracing paper, trace the rectangle (A) from the Tracing Master for Geometric Shapes.

3 Place the traced shape over the sketch of the band so the rectangle sits just above the center of the band.

5



COUNTER SKETCHING

4 Make a straight line connecting the top left corner of the rectangle to the top left edge of the band. Next, connect the top right corner to the top right edge of the band.

5 Connect the other two corners—that is, connect the bottom left corner of the rectangle to the bottom left edge of the band, etc.

6 Trace the sides of the band.

7 Now trace the fingerhole.

8 Complete the ring by tracing the top-back and bottom-back of the band.

6

Courtesy: Gemological Institute of America

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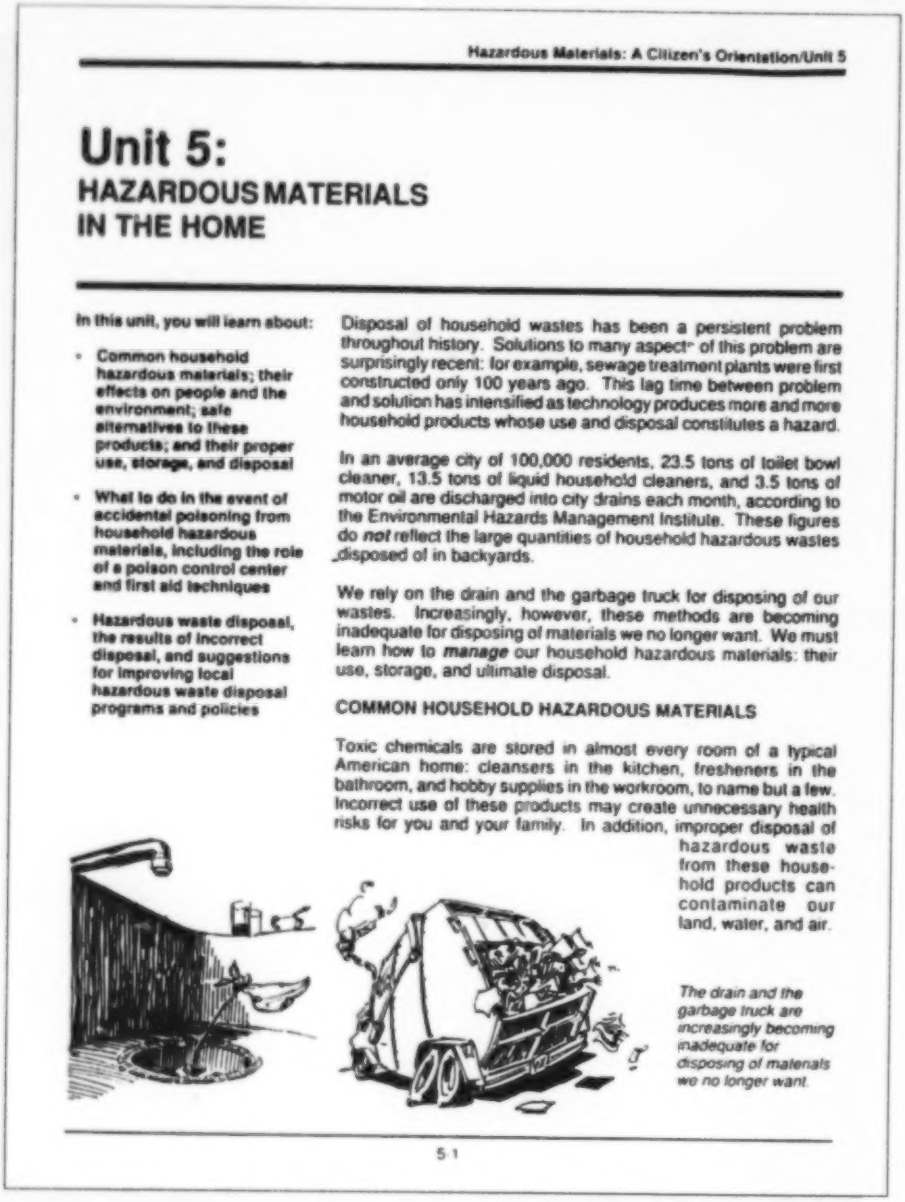


Unit 5:

HAZARDOUS MATERIALS IN THE HOME

In this unit, you will learn about:

- **Common household hazardous materials; their effects on people and the environment; safe alternatives to these products; and their proper use, storage, and disposal**
- **What to do in the event of accidental poisoning from household hazardous materials, including the role of a poison control center and first aid techniques**
- **Hazardous waste disposal, the results of incorrect disposal, and suggestions for improving local hazardous waste disposal programs and policies**

Disposal of household wastes has been a persistent problem throughout history. Solutions to many aspects of this problem are surprisingly recent: for example, sewage treatment plants were first constructed only 100 years ago. This lag time between problem and solution has intensified as technology produces more and more household products whose use and disposal constitutes a hazard.

In an average city of 100,000 residents, 23.5 tons of toilet bowl cleaner, 13.5 tons of liquid household cleaners, and 3.5 tons of motor oil are discharged into city drains each month, according to the Environmental Hazards Management Institute. These figures do *not* reflect the large quantities of household hazardous wastes disposed of in backyards.

We rely on the drain and the garbage truck for disposing of our wastes. Increasingly, however, these methods are becoming inadequate for disposing of materials we no longer want. We must learn how to ***manage*** our household hazardous materials: their use, storage, and ultimate disposal.

COMMON HOUSEHOLD HAZARDOUS MATERIALS

Toxic chemicals are stored in almost every room of a typical American home: cleansers in the kitchen, fresheners in the bathroom, and hobby supplies in the workroom, to name but a few. Incorrect use of these products may create unnecessary health risks for you and your family. In addition, improper disposal of hazardous waste from these household products can contaminate our land, water, and air.

The drain and the garbage truck are increasingly becoming inadequate for disposing of materials we no longer want.

Courtesy: Emergency Management Institute

Chapter Twelve

The Curriculum Development Cycle

by
Carl B. Gibbs, D.Min.
Academic Dean
ICI University

The Author

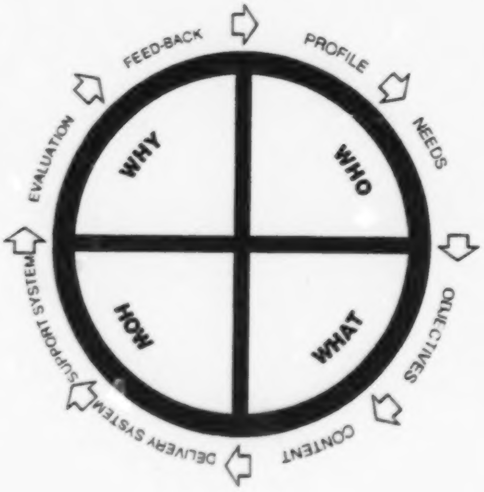
Carl is presently the Academic Dean of ICI University, Irving, Texas, a distance study institution offering degree level studies in more than 80 countries. For the last 15 years, Carl has worked exclusively with correspondence and distance education. For nine years he served as Director of Curriculum Development for the Brazilian Extension Schools of Theology.

Carl has written six correspondence courses and continues to actively promote alternative education by serving as the President of the Association of Christian Continuing Education Schools and Seminars.

Introduction

Have you ever helped a teenager finish a science project the night before it is due? I remember the frustration in our family as we rushed to find missing materials, reworked steps that had been done out of sequence, and finished the project only to find we had left out an important requirement. Exasperated, my wife exclaimed, "Why don't they give directions with these things?" "They did," my twelve year old confessed, "I forgot them in my locker."

As you develop a new course or re-evaluate your present curriculum, I recommend that you keep the "directions" in this chapter handy. They present a "bird's eye" view of the eight vital steps involved in curriculum development. These steps are assigned titles on the outer rim of The Curriculum Development Wheel below (hereafter called *The Wheel*).



The Curriculum Development Wheel

The Curriculum Development Wheel

Quickly over-viewing *The Wheel* we see that the process begins by asking for a "student's profile." With this "profile" in mind, the "student's needs" can be assessed. The needs, in turn, are the basis for establishing "goals and objectives" for the new course from which the content can then be determined.

Once the content is determined, the next step is to choose the "teaching methods" and the "medium" that will be used to present it. After these are chosen, we are ready to decide how we will determine whether the student has learned the content. This requires that we establish an "evaluation system."

Finally, we want to know if the course is successfully teaching. To determine this, the new course must be field tested (or validated). The results of the scores and comments of a sample group of students will determine adjustments that must be made in the course. These adjustments, however, should not be the final ones that are made. As the course is in use, a system for soliciting and monitoring "feedback" should be established. This "feedback" will often lead to a reassessment of the student and the development of a new list of needs, then the process will begin again.

The questions inside *The Wheel* represent four broader steps. The student profile and needs assessment answer the question "Who is the student?"; the objectives and content answer "What content should the new course or curriculum have?"; the teaching and evaluation methods relate to questions such as "How will the student be taught?" and "How will we know if the student has learned?"; and, finally, field testing and feedback help us answer "Why was this course effective or not effective?" Our response to these last questions will determine whether we reinforce or modify aspects of the course.

This chapter will briefly overview each of these steps. After you have read through the chapter, take advantage of the suggested reading list to examine the details of any phase you did not understand fully.

The Student's Profile

Recently I met with a group of educators to develop a curriculum for a new school. The first impulse of all the participants was to list the various courses they thought the students should study. The list continued to grow until it became apparent that the student would have to study nearly a decade to complete the subjects listed. Finally, someone suggested that we begin again by answering the questions, "Who is the target audience and what do we want them to be able to do when they complete their studies?"

Note that these questions mark the beginning of the Curriculum Development Wheel. To answer the question "Who is the student?" we must examine the student's demographic situation, social setting, academic level, time availability, financial ability, and motivational level. As an example of how to ask these questions, let's imagine we are developing a college course for "baby boomers" who want to finish their college degrees.

Our analysis and applications will only serve as a partial example. Your own study should be more extensive. It should include reading current research, interviewing content experts, surveying potential students, etc. While this example will be aimed at a large audience, your analysis should concentrate, as much as possible, on a well-defined target group.

Demographic Information

A student profile should answer basic demographic questions such as: How much education does the typical student have?

How many potential students are there? How many students between 35 and 50 are presently enrolled in degree completion programs? Where do the students live? What are their occupations?

Social Setting

Baby boomers belong to one the most diverse generations in history. This was the first generation raised with television and the first to be exposed to the "instant and disposable" in everything, from foods to relationships. A college education and the computer became common for the first time in this generation, and worldwide knowledge has more than doubled in their lifetimes.

We should ask ourselves how the social environment of the prospective student will affect that individual's study habits and in what type of delivery system he or she will learn best. Can we expect the typical student to be computer literate or to have a personal computer? Will the typical student accept a completely print-based course if he or she has been raised to expect fast-changing, multimedia presentations?

Academic Level

Baby boomers' parents wanted their children to have the educational opportunities they had been denied. As a result, no generation in United States or Canadian history has more members who went to college and more who dropped out of college. Many young baby boomers only attended college to please their parents and then dropped out to pursue a career or make a social statement.

Some questions that you must ask in this profile are: Can a curriculum designed for this group assume a certain amount of "entry level knowledge" of the basic, introductory college courses? How much can you expect them to know about the specific course you are developing? This generation was the first to have television, which has become a detrimental factor in their ability to read and concentrate. Will the course have to be carefully structured in smaller "bite-size" pieces of information with varied teaching methods?

The "boomers" were also the first generation to have computers and technology as a regular part of the classroom. Their education featured more personal choices, and the training they received tended to be more entertainment oriented with electronic multimedia devices. Will the student who is accustomed to electronic support systems expect this in a distance education course?

Financial Ability and Time Availability

The baby boomers are not as affluent as their parents, but they do have a relatively large amount of discretionary income for priorities although they are often strapped for finances due to in large part to "plastic credit." The boomers' decision to pay for additional training will be determined more by the perceived need for that training than by financial sacrifice.

The boomers tend to live busy, hectic lives, although they are the first generation of Americans to enjoy a 38 hour work week. Just as they tend to have discretionary income but are in debt, so they have more discretionary time than former generations but are overly busy. This is due largely to the new options and opportunities that ease of travel and new media devices have given them.

Living at such an active pace, boomers will probably tend to favor education that can be accomplished with the least damage to their schedule. On the other hand, they will find and make sacrifices in their scheduled time for a training program they highly value.

Motivational Level

The tendency to make career changes in their early years has left the boomers without occupational security. At the same time, their career options shrink as they near retirement. The question is: How important is finishing a degree to their life goals? Do they see it as a necessary step to compete successfully in the job market or for mere personal satisfaction?

The Needs Assessment

The second step on *The Wheel* is to identify the student's needs. This does not mean **all** of the needs, but, rather, needs that relate to the material in the new course. Needs, in the context of this paper, are defined as the differences between where the student is and where you want that student to be after he or she finishes your course.

To determine these needs, I suggest research methods that include interviews and surveys of prospective students and group discussions with other educators in the field of study, business leaders, professionals in the field, and so on. A common method is to make a pre-assessment of a sample group by giving its members a pretest to evaluate their entry-level knowledge. The results are later compared with evaluation results after they have completed the future course.

Your goal will be to find out what the prospective students' expectations are, what the students perceive their needs to be, and how much the students already know. Based on interviews with experts in the field, you will need to determine what the student must know to be effectively trained in the area.

With this information is mind, think of an average student. (If you know one personally, think of him or her specifically.) Now with this person in mind, list what you think he or she knows about the subject of the course in three areas:

KNOW: What is the student's entry-level knowledge about the subject of the course? What must be learned?

BE: What values, beliefs, and attitudes toward the subject of the course does the student hold?

DO: What skills does the student already have that do not need to be taught again?

Now, on a second piece of paper, do the same exercise but, this time, describe what the student needs to know, to be like, and to be able to do when he or she "finishes" the course. Do not be concerned with restricting the list at this point. That will come at a later step in *The Wheel.*

Now combine both lists. Turn a piece of paper lengthwise and divide it into three columns. Label the left column "Where the students are." Label the right column "Where the students should be." Finally, in the gap between the two, write: "How to get from here to there" or simply, "the needs."

Where the Student Is	The Needs	Where the Student Should Be

I strongly recommend that this exercise be completed by a group of content experts who know both the target audience and what information must be taught. The result of the exercise should be a full list of "needs" from which the objectives of the course will be derived.

The Course Objectives

At this point in *The Wheel* we are moving from examining "who" the student is to determining "what" we will teach him or her. You will notice that the answer to this question is directly related to the list of needs that were created in the last step.

First, the list of needs must be reduced to what can be taught in one course. A "purpose statement" for the course is an excellent place to start to determine what needs must be eliminated.

Purpose Statement

The "purpose statement" is a description of what the student will be like "after" the instruction. It should not describe what the student will be doing throughout the course; rather, it should relate what the student will be able to do when he or she completes the course. This is not a course description in a catalog, it is a statement of what the instruction will do for the student.

The statement should also define the uniqueness of the instruction, limit the parameters of the instruction, and identify potential students. Here is an example for a course on curriculum development:

> *The purpose of this course is to train distance education educators to use the eight steps of curriculum development in the production of their own distance education courses.*

This statement restricts what will be taught to the eight steps of curriculum development and identifies the students as distance education leaders. The "purpose statement" looks toward the finished product: students who are trained to produce courses in their own programs. Notice that it also identifies the uniqueness of the content to the medium of distance education.

Your "purpose statement" may not be this specific, but it should be specific enough to enable you to reread your list of needs and cull out those that are peripheral to your purpose, beyond the scope of your purpose, and those that are redundant.

Let me caution you to exclude objectives that are aimed so far into the future that they cannot be obtained within the time restrictions of the course. An example might be, "The student needs a lifelong habit of. . . ."

From Needs to Objectives

On a new sheet of paper outline the reduced list of needs on the left side of the paper under the caption, "The Students' Needs." On the right side of the paper label a column "Objectives." Now, translate each need into an objective by looking at the need and completing this phrase: "When the student finishes this course, he or she should be able to . . . ." Here is an example:

The Student's Needs	Objectives
Understanding the target audience for which he or she is writing.	Writing a five page profile of a student for whom he or she might write an extension course.

Educational objectives should begin with a verb that requires a measurable response and describes what the student will be able to do—not what the teacher will do or teach. Avoid verbs such as appreciate, believe, understand, and know. Instead, use verbs like recite, contrast, write, compare, construct, assemble, and distinguish. (See Chapter Five on writing objectives in this Handbook.)

Classify and Prioritize

The list of objectives should include some broad, over-arching goals and many specific goals that will enable the student to fulfill the broader goals. At this point, classify the larger objectives and label them course objectives or goals. Under each of these, list the lesser objectives that relate to them. The broad goals will become the units and lessons of your course, and the more specific enabling objectives will define the content of the sections of each lesson.

The Course Content

If the analysis of the needs and the statement of objectives are well done, the content of the course will develop naturally out of these objectives. Beside each objective, place the subject content that must be learned in order to accomplish that objective. Sometimes the objective is accomplished with a learning activity. Write these down as well.

At this point you will have a large list of possible subjects and proposed activities that will be too much for one course. In order to reduce this list to a manageable size, you will have to answer these three questions:

Scope:	What will the course include and what will it exclude?
Balance:	What subject matter will have priority in space and time?
Sequence:	In what order will the subjects be taught?

Scope and Balance

You can answer the first two curriculum questions by creating a simple grid called a "Two by Two Chart." Follow the example given below and make a spreadsheet with the objectives listed on the left, vertical column. Then list the prospective subjects and activities across the top of the page and make a grid with a line from each objective intersecting with the topic and activities in the top column.

	SUBJECT	ACTIVITY	SUBJECT	ACTIVITY	SUBJECT	ACTIVITY
OBJECTIVE 1						
OBJECTIVE 2						
OBJECTIVE 3						
ETC.						

Two by Two Chart

The purpose of the grid is to show the relationship of each objective to the data in the horizontal column. Evaluate each objective against the items listed on top of the page. When the objective is met or partially met by a subject or activity, mark the box where it intersects with the objective.

It is possible for one subject or activity to apply to the same objective or for one objective to be met by several items in the horizontal list.

	SUBJECT	ACTIVITY	SUBJECT	ACTIVITY	SUBJECT	ACTIVITY
OBJECTIVE 1	X	X				
OBJECTIVE 2			XXX	X		
OBJECTIVE 3						XX
ETC.						

Completed Two by Two Chart

When you finish making these calculations, look for areas of overemphasis and redundancy. At the same time verify that each objective is adequately covered. You can do this by simply evaluating your "X" responses. Is an objective excessively treated? If so, you may want to exclude some item from the list on the top of the chart. In the same way, you will want to ask what objectives are not adequately treated and then add to the list. These types of decisions determine the scope and balance of your course.

Sequence

Deciding on the sequence in which topics will be taught is always a crucial matter. Here are just a few options to consider:

- The most dated to the most recent
- The simplest to the most complex
- The specific to the general
- The general to the specific
- The first step to the last step
- The facts to the principles
- The principles to the application

One crucial question in determining the sequence of learning is, Does the student have sufficient information at every point in the process to move step-by-step in the learning process? In other words, what knowledge is necessary to proceed to higher levels of learning? Does the student know the basic facts and understand the key concepts?

A second question is whether the sequence is both efficient and effective. By this we mean that it not only presents all the data in a logical form but also that it is effective in motivating the student to learn, apply, and retain the information. To do this the sequence may require repetition, an overview, a review, examples, case studies, and so on.

Before moving to the next step in *The Wheel*, study your "subject and activity" list. Look for an inherent sequence in the subjects and ask yourself the questions related to sequencing. At this point, you should be able to propose a sequence of instruction.

The Teaching Methods and Media

Once we know "what" we will teach, the next question is: How will we teach it? and, similarly, How will we know if the student has learned? The first question relates to the teaching methods and media delivery system; the second to the process of evaluation.

Selecting the Teaching Method and Instructional Model

In the previous step we progressed from the objectives to specific statements about the content that will be taught. Now we are ready to consider "how" this content will be taught. This includes the teaching methods used, the instructional design of the course, and the medium of delivery.

In planning "teaching methods," do not restrict yourself to the lecture method, so common in the traditional classroom. Can your course include case studies in which the student must give a personal opinion? Can you tape an interview with an expert in the field to give variety to the voice of the teacher? Can the students interact with each other through an "on-line" electronic mail system?

There is no ideal instructional design model. Although there are some basic models suggested, each course must be written with its unique goals and target audience in mind. However, here are some key principles that can help you to produce successful teaching methods:

1. **Students learn best when they have advanced organizers that inform them of the course's direction of progress and what will be expected of them.** A "must" for any distance education course

is the advanced organizer at the beginning of the course and at the beginning of each unit or chapter. This organizer generally overviews the material and assignments to come and states the lesson objectives also.

2. Students learn best when information is presented in easily digestible bites of instruction. In other words, the course should take into account the student's attention span. A good principle is to break up long pages of text with subtitles and diversify long taped lectures with illustrations or interviews.

3. Students learn best when they are actively involved in the learning process. The student should be required to interact regularly with the materials through questions and assignments. It is particularly beneficial if this interaction is interspersed throughout the lessons, not just at the end of units or the end of the entire course.

4. Students learn best when they see an application to their own lives. The higher levels of learning require a student to be able to apply knowledge to his own situation and even create his own product or develop his own ideas. The learning method that is implemented should give the student regular opportunities to make such applications.

5. Students learn best when they have immediate feedback. This implies that when students are asked a question they need to see the correct answer as soon as possible. General review questions in the course need to make the answers immediately accessible to the student, and exams and papers should be graded and returned as soon as possible.

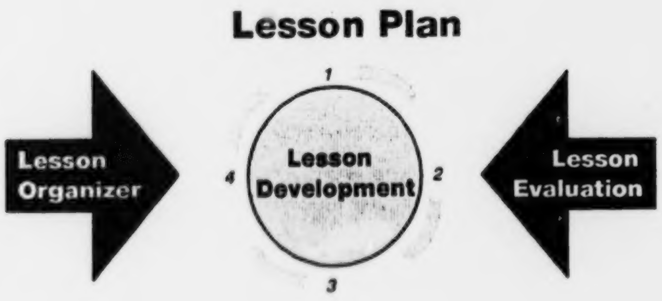
6. Students learn best when they are given reviews of lengthy blocks of instruction. For this reason, it is advisable to provide a review exercise (questions, activity) at the end of each lesson. A periodic review of key concepts for an entire section or unit is also helpful.

With these principles in mind, let me suggest a possible instructional design that includes all of these elements: First, it would use advance organizers for the course itself and for each module (unit or lesson) of instruction. An advanced organizer gives the student a global idea of the material that will be studied, activities that will be required, and major objectives that must be accomplished.

To fulfill principle two, it is necessary to divide the course into modules (lessons) of instruction that are, in turn, divided into teaching-learning units (TLUs). To apply principles three, four, and five, each TLU would begin with a performance objective and be followed by a set of materials and learning activities, a method of self-evaluation related to the objective, and a provision for verification of the learning.

Principle six could be applied by using a closing summary and review exercise (quiz, questions, etc.). The entire unit and course could also have a review and evaluation section.

The instructional design of the lesson we have just described might be illustrated with the figure below. Note that the arrow on the left points toward the TLU. It represents the advance organizer. The circle with intermittent arrows represents the TLUs (there is only one pictured) composed of: (1) a performance objective, (2) learning material and activities, (3) a self-evaluation element, and (4) feedback for the student. Finally the arrow pointing back toward the lesson represents the review and evaluation at the end of the section of study.



Instructional degisn of the lesson described.

Selecting the Delivery System

A vital question in designing a course of study is what medium will be used to present the course. Will it be completely print based? Will voice tapes or video lectures be used? Will the student study with a modem and computer? Will the student be able to contact a mentor by phone, letter, seminar, or personal visit? To answer these questions we must consider the motivation of the students, the content to be taught, and the resources of the school.

If the course is completely print based, you must ask yourself if it should be typeset and printed professionally or run off on a personal computer and photo copied. Will the instruction be by the "guided research method" or will it be tightly structured?

Cassette tapes have the advantage of being inexpensive and relatively easy to produce. An actual lecture can be duplicated and the printed aspect of the course limited to instructions on how to use the material and assignments. If tapes are used, care should be taken that the sound is clear and that the speaker does not ramble in his or her presentation. An accompanying printed outline for the student is helpful.

Videos are commonly used in distance education, but in general they are not well received unless they are professionally produced. Hours and hours of a "talking head" approach bore students who have been raised with television. This method also restricts the environment in which study can take place; the student will have to be near a TV for hours at a time.

The computer modem method is exciting and has massive potential for future development. However, large numbers of students are necessary to finance the equipment and software programs and students will have to be equipped with the "right hardware." Of course they will also need to be willing to pay extra for the advantages of learning by computer. This method is also labor intensive for a school as a professor will have to be directly involved with the learning process.

The Evaluation System

After deciding on the method of delivery for the course the next logical step is to decide "how" it will be possible to determine whether the student is learning or not. In most cases, it is also necessary to establish to what extent the student has learned the material.

Formative Evaluation

The student should not have to wait until a mid-course exam or final exam to know if he or she is learning. Throughout a distance education course students should have practice tests and projects that help "form" their understanding, even if these are not part of the final grade. This type of evaluation is called "formative" evaluation.

If the formative evaluation is graded by the school, the instructor will have an opportunity to give the student feedback and redirect his or her learning before a concept is learned wrongly. Small victories in the formative evaluation not only prepare the student for the evaluation on which he or she will be graded, but also build the student's confidence.

Summative Evaluation

The difference between formative and summative evaluation is that the first is meant only to help form the student's understanding; it is not meant to grade the student. The latter is meant to make a "summary" assessment of the learning process and to award the student a grade.

Summative evaluations can be long objective exams, essay questions, projects, research papers, and so on. Ideally, no method should be used exclusively. The advantages of the objective test items are that they can test specifics; they can be graded on a scanning machine; and they provide an objective testing instrument. Their primary disadvantage is that they generally do not evaluate higher levels of learning as easily as other methods.

By contrast, written assignments are ideal for evaluating learning on the higher levels but they are labor intensive and invariably add a subjective element to the grading process.

Criterion-Referenced Testing

No matter what method is used, the golden rule of evaluation is that **it must be criterion referenced.** This means that all the questions should respond directly to stated objectives. The list of objectives stated earlier should serve as a guide to writing questions and making assignments. The student should not be required to do anything that was not given in one of the objectives. In fact, it is a good idea to keep a file that indicates the objective on which each question and assignment is based. This will be invaluable in the assessment of the course and the evaluation system.

The Field Testing

The final two steps in *The Wheel* evaluate the course rather than the students. These steps include a process of field testing and a system for providing ongoing feedback from the students. The question asked in both steps is: Why was the course effective or ineffective? From this question comes a fresh look at the course to reinforce or correct its curriculum.

Once the preliminary draft of the course is complete, it should be sent to a content expert for a review. It is a good idea to give the content expert detailed instructions concerning his or her task. A form, listing the key areas of concern, should be used to focus the expert's attention on the areas of concern for the institution.

If time and finances allow, the course should also be field tested. This testing is carried out from three perspectives: The analytic, the descriptive, and the experimental. The analytic perspective refers to the analysis of statistics such as the student's marks, questions consistently missed, time spent on each lesson, and the results of pre-tests and post-tests. In this phase of the field test a pre-test is developed that is based on the key objectives of the course. The purpose of administering this test is to determine the entry level knowledge of the student. The second step is to analyze the results of the normal course evaluation process. Are some questions always missed? Are some lessons or units more difficult than others? Finally, the students will be given a post-test. This is based on the same objectives as the pre-test although the questions themselves should be different. By comparing the two, the institution can easily determine the effectiveness (or ineffectiveness) of the instruction.

The descriptive perspective is not based on the objective data of students' grades but on the students' perceptions of the course. For this analysis a feedback survey should be created. A typical survey will have bipolar, unipolar, and open-ended questions. Bipolar questions are those that ask the student to choose between two contrasting adjectives such as "interesting /uninteresting" or "difficult/easy." These questions can be improved by asking for levels responses such as in the example below:

I found lesson seven to be:

Difficult__ Fairly Difficult__ About Right___ Easy__ Too Easy___

Another type of bipolar question asks for a number value rather than adjectives. The advantage is that the negative and positive numbers can be added and comparison can be easily calculated as the following example indicates.

I found lesson seven to be: (circle one)

DIFFICULT -5, -4, -3, -2, -1, 0 +1,+2, +3, +4, +5 EASY

Unipolar questions do not give contrasting adjectives but specify the object for which the student is to give his opinion. Here is an example:

Check the Lessons that you found were difficult for you.

___Lesson 1
___Lesson 2
___Lesson 3
___Lesson 4
___Lesson 5

No survey is complete without an opportunity for the student to write his or her perceptions of the curriculum. To stimulate and direct the student's thinking, a form should be provided that asks leading questions which require a short answer such as: "How do you feel this course will help you in your work? or "What did you like or dislike about this course?" Like the pre-test and post-test, these questions should cover the primary objectives of the course. They should also include inquiries about the delivery system and student services.

Occasionally, a school will want to experiment with two delivery systems and may use the "experimental perspective" in field testing. In this method, each group is given an alternative course. Both groups would take the same pre-test and post-test and the results would be compared. For example, one group might use a print-based curriculum and the other have a video supplement. The results of both would be contrasted for their effectiveness. The effectiveness is calculated by striking a balance between the student reaching the stated objectives and the cost to the institution. This price must include the operating costs as well as the developmental costs.

In any field testing, do not overlook the opportunity to have the student record the time spent on each lesson and assignment. This information provides valuable insight about possible problems with balance and work load.

The On-Going Feedback

Once the course is produced, the evaluation process is not over. The school should continually monitor and record the results of the exams. The student should also have a means of making direct feedback to the school, perhaps through a form that is filled out at the end of the course or through occasional interaction with an instructor. The school, in an ongoing process, must systematically evaluate this feedback and adjust the course accordingly. From this information, questions should be asked such as: Are certain questions consistently missed? Are parts of the course confusing? Are some assignments unclear, too easy, or too difficult? A feedback process will discover the answers to these questions and adjustments can be made.

In any area of study, knowledge is exploding at an incredible pace. It has been estimated that half of all the knowledge recorded in the world today has been discovered since 1984. It goes without saying that courses need to be updated regularly and a new textbook chosen periodically.

Feedback does not always result in adding to the curriculum of the course. Sometimes it may demonstrate that the objectives can be achieved less expensively by reforming assignments that are less labor-intensive for the institution.

A crucial tool for evaluating a school's entire curriculum is the "outcomes assessment." This is a study of the effectiveness of the curriculum in the life of the student after he or she has graduated. Although this evaluation tends to be done at the macro (entire curriculum) level, it also includes questions at the micro (individual course) level as well.

Conclusion

This completes *The Wheel*. Although you may be tempted to skip some of these steps, keep in mind that each step that is deleted will diminish your ability to focus on the task at hand. As the adage states, "The person who aims at nothing will always hit his goal." The purpose of the curriculum development process is to help you "aim" your instruction toward effective teaching. Here are some negative consequences of ignoring steps in the process:

1. Without the student profile, you will have no basis on which to evaluate the students' needs.

2. Without the needs assessment, there will be no basis for establishing course objectives.

3. Without establishing objectives, there will be no basis for determining the content of the course.

4. Without a clear idea of the scope, balance and sequence of the content, there will be no basis on which to determine teaching methods and medium to use.

5. Without care in selecting the teaching methods and delivery system you would find it difficult to fairly evaluate the student's success.

6. Without a criterion based evaluation system, you will have no way to perform a meaningful field test.

7. Without a field test, the only process for knowing if the course is effective is by teaching it and waiting for feedback.

8. Without an ongoing process of soliciting and monitoring feedback you will not be able to determine whether the course is successfully teaching.

Looking at the art labeled "The Curriculum Development Wheel" at the beginning of this chapter, you will notice that there is an arrow between feedback and the profile. This indicates that the feedback leads us to reassess the student and his needs again and *The Wheel* repeats its cycle. Even after the course is complete the institution should periodically think through the circle for opportunities to improve the course, cut its expenses, or adapt it to changing needs of the target audience.

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Chapter Thirteen

Financial Analysis in Course Development

by
Robert J. Godfrey
President
Truck Marketing Institute

The Author

Rob Godfrey has been with Truck Marketing Institute (TMI) since 1967. He has chaired NHSC workshop committees, authored a major publication (Outcomes Assessment Handbook), served on the Research and Educational Standards Committee, and served with distinction on several examining committees.

He is a "can do" supporter of the NHSC and has volunteered hundreds of hours of his time to NHSC over the years. Rob received the "NHSC Distinguished Service Award" in April 1993. He has worked in all aspects of running a home study school. His expertise in the home study field is reflected in this chapter on financial analysis.

Introduction

Have you ever heard of schools that charge no tuition? Yes, there are some! How about developing new courses without any expense? Unlikely. Even the most generous schools who charge no tuition incur expenses in course development.

Whether you are an up and coming course developer or the new CEO of a school, you have to be aware of the cost factors inherent with the development of new courses and the operation of schools. Likewise, you will also be called upon to propose and/or approve pricing strategies for new courses that will have a direct bearing on your "bottom line."

To help you along, here some fundamentals of cost accounting and pricing strategies presented from the perspective of proprietary education. By reading this chapter in the next few minutes, you should be able to:

1. List typical fixed costs in your school;
2. Demonstrate which costs are variable based on enrollments;
3. Explain how "contribution" is determined;
4. Calculate a basic break-even enrollment volume; and
5. Explain the affects of different pricing strategies.

Let's start with a quick look at the dictionary of basic accounting terms as they apply to course development and school operations.

Accounting Terminology

You probably already have a good grasp of most of this material, but here are the basic principles for figuring out what your costs are and how they will affect your pricing strategies and the bottom line.

- **Fixed Costs:** Let's say you rent an office, equip it with furniture and equipment, insure it, and pay yourself and an assistant a salary. If you do no business and pay no other bills but these "start up" costs, you are paying **fixed costs**. Within certain enrollment levels, fixed costs are those that will not vary with enrollments.

In more concrete terms, some of your fixed costs will be: rent, insurance, management and administrative salaries, depreciation on equipment, insurance, basic supplies and course development expenses.

Course development as a fixed cost? Yes. Even if you are the one creating a new course, your investment of time comes at a price. Since you can't begin to recoup your investment, you need to amortize the cost of course development out over a period of 3-5 years.

Think of course development costs as a research and development expense. On the other hand, you might be able to greatly minimize "R and D" for new courses by purchasing already published textbooks and study materials. Such a strategy will transfer what you might have spent on course development into the price you pay a publisher for the materials. If that sounds like it might be a variable cost, you're right!

- **Variable Costs:** As you enroll students, you incur added costs. Ideally, these fluctuate with your enrollment volume. In reality, you need to estimate the costs needed to service given levels of enrollments and then translate those costs into an estimated cost per unit (enrollment).

Costs that are considered variable would be: mail room expense (including rent), postage and freight, new enrollment processing and fulfillment, grading of exams, updating and revising course materials, advertising, marketing and direct sales expenses.

Wouldn't some of the advertising and sales expense be considered fixed costs? Yes, but for many schools, budgets for advertising and sales departments can be a function of enrollment volumes. As a CEO, it is your way to reward a department that does a good sales job. The better they do, the more enrollments you get, and the bigger their budget becomes.

As an aside, the sales or advertising budget may also be tempered by course completion rates and/or average tuition realized per student.

- **Advertised Tuition:** This would be the tuition for a complete course, including all kits, supplies, etc.

- **Average Tuition:** It may come as a surprise, but many schools are able to collect only a percentage of the full tuition. Given pay as you go plans or enrollment contracts with cancellation provisions, some schools will end up with average (realized) tuitions amounting to 50-80% of the full amount.

- **Contribution:** In business schools, this is known as "contribution to profit and absorption of overhead." For us, it means what remains when you take the average tuition per student and subtract variable cost per student.

- **Operating Margin:** Tuition revenues less the fixed costs and variable costs yield the operating margin. Costs higher than tuitions result in an operating loss while revenues exceeding fixed and variable costs provide for an operating profit.

- **Allocation:** Let's say that you have several courses. Take your fixed costs and apportion them out to each course. That is an allocation of fixed costs.

- **Breakeven Point:** This is the number of enrollments needed for you to achieve an operating profit. Fixed costs divided by the contribution per enrollment gives the Breakeven point.

- **Target Volume:** An enrollment volume that you would like to achieve in order to have a comfortable operating profit.

- **Relevant Range:** Your fixed and variable cost estimates will begin to vary with enrollment volumes and with maturity of the school. A start-up school will have minimized fixed costs, but it will reach an enrollment level at which additional facilities and personnel will be needed. Have an understanding of what the relevant range of enrollments is for your cost scenario.

That's quite enough for now! Take a short break, run through the terms again, and jot down any questions you have. Our next section will begin to demonstrate the process of financial analysis.

Summarizing Fixed and Variable Costs

Let's assume that you are a start up school, renting minimum space, with a modest staff committed to launching your can't miss "Accounting for the Masses" course in the next six months. Here is what you have found after some digging through your start up check register in order to estimate costs:

Fixed Costs (per year)		Variable Costs (per unit)	
Rent	$30,000	Course materials	$30
Administrative	50,000	Postage & freight	10
Utilities	11,000	Enrollment processing	20
Depreciation	9,000	Exam processing	35
Insurance	2,000	Course updates	10
Supplies	3,000	Direct sales	10
Course R & D	30,000	Advertising	25
Sum Fixed Costs	$135,000	Sum Variable Costs	$140

In this illustration of costs, we are expensing new course development at the rate of $30,000 per year for this course. An alternate strategy would be to charge it off as a variable expense by increasing the "course materials" cost by perhaps $50 per unit. If we assume $150,000 development cost to be charged off, it would require 3,000 enrollments to recover the cost. The sooner sales reach that number, the sooner the cost is recovered.

Revenues and Contribution

The marketing guru for your school is proposing two pricing scenarios for the Accounting course. "Plan A" involves a "competitive" price, a modest advertising budget of $25 per unit, and an expected yield of 1,000 enrollments with an average (i.e., realized) tuition of $475 per student.

An alternate "Plan B" is also proposed, which doubles the per unit advertising cost (to $50 each), lowers the advertised tuition to $595, hopes for 1,500 enrollments per year yielding $425 per student.

In both cases, fixed costs are estimated at $135,000 per year. Variable costs are pegged at $140 per unit for "Plan A" while the variable for "Plan B" increases to $165 each. Here is a summary of the expected yearly revenue and expenses for both plans:

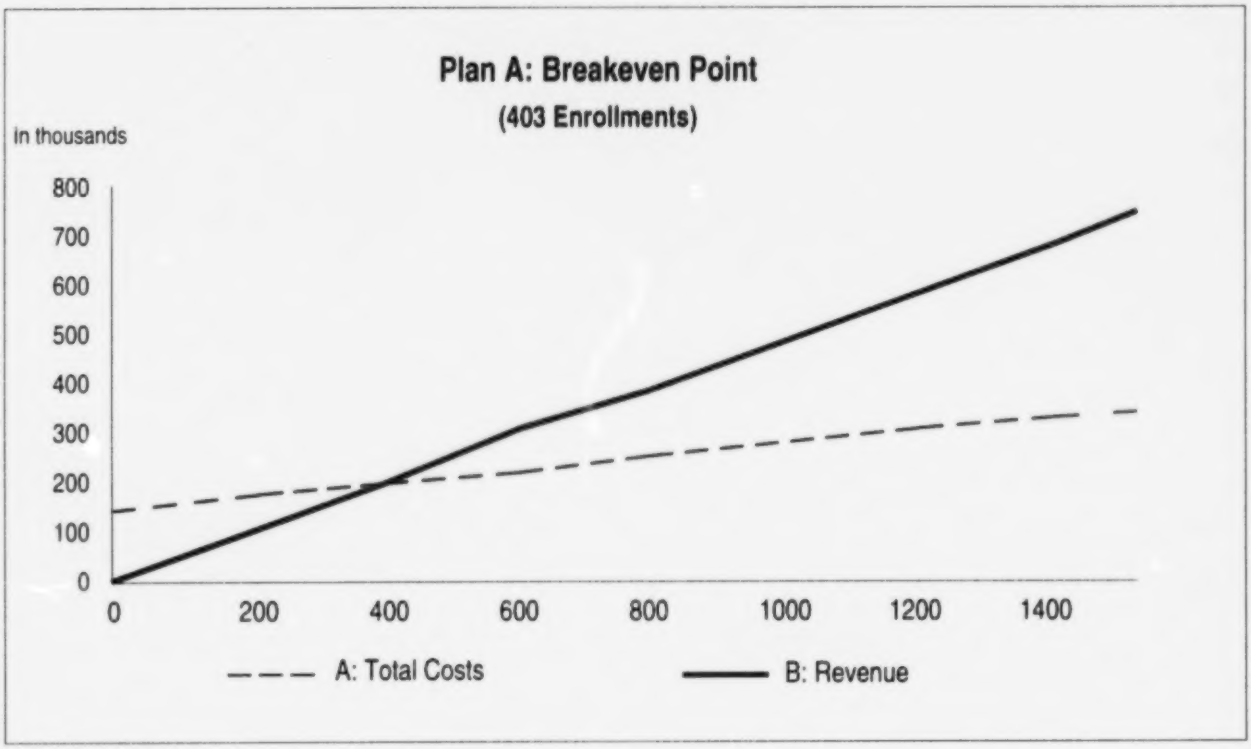
	Plan A	Plan B
Advertised tuition	$795	$595
Average tuition	$475	$425
Enrollment volume	1000	1500
Gross revenue	$475,000	$637,500
Minus: Fixed costs	(135,000)	(135,000)
Minus: Variable costs	(140,000)	(247,500)
Operating Margin	$200,000	$255,000
Average tuition	$475	$425
Less: Variable each	(140)	(165)
Contribution each	$335	$260
Fixed costs	$135,000	$135,000
Divide by contribution	$235 each	$260 each
Equals: Breakeven point	403 units	519 units

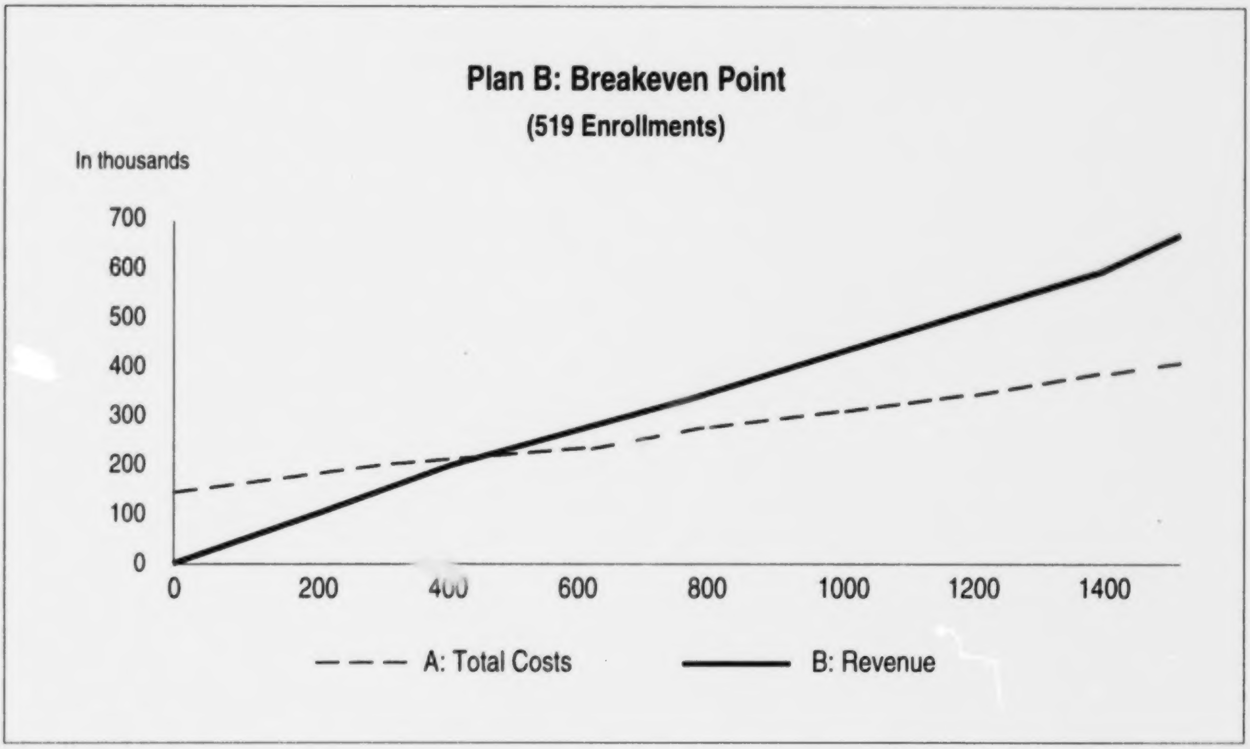
The strategy advocated under "Plan B" might be that of a school entering a market in which there are existing, established courses. Presumably, those courses have a lower cost structure. To compete, "Plan B" offers a more aggressive "lower than market" tuition, accepts a lower average tuition and relies on heavy advertising for market penetration. The increase of 500 enrollments over "Plan A" would come either from an expansion in the market or out of the competitor's share.

Demonstrating Breakeven Strategies

A very easy way to demonstrate breakeven analysis is by the use of line charts with "X" and "Y" axis. On each chart, you plot the first line ("A: Total Cost") showing the **combined fixed and variable costs** for a relevant range of enrollments. Your second line ("B: Revenue") illustrates **gross revenue based on enrollments multiplied by the average per enrollment tuition**. The point at which the "Revenue" line passes the "Total Cost" line represents your breakeven point in units.

Here are two illustrations demonstrating the breakeven analysis for using our figures for "Plan A" and "Plan B" with an enrollment range of 0 to 1500 units per year.





Summarizing Financial Analysis

Course development involves expenses, but it also involves revenues in excess of expenses. Your ability to tell the difference between fixed costs and variable costs may be one of the most important components in developing a course pricing strategy.

In a start-up school with one course, as we have illustrated, allocation of expenses and calculation of a breakeven point is fairly simple. Larger schools with more courses and higher overhead costs require more complex cost allocation procedures and more than likely a full time accountant to do it!

But, no matter what your size, the courses you develop have to earn more money than they cost! Whether you decide to fund course development internally or rely on external sources, be sure you can perform the simple financial analyses outlined in this chapter.

Conclusion

Take a look at your financial records, no matter what your size. Do you have the ability to extract information in order to perform cost allocations and breakeven analyses?

Think about your operation and where your monies are expended. What are the fixed expenses and what are variables that you could eliminate in short order in a period of decreasing enrollments?

We tend to get wrapped up in the day to day problems of developing and revising courses and always searching for greater enrollments. Make a resolution to devote some time next week to thinking about this chapter and how it might affect your way of doing business.

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